Lilium Sarmiense:

OR, A

DESCRIPTION

OF THE

GUERNSAY-LILLY.

To which is added

The Botanical Diſſection

OF THE

COFFEE BERRY.

With FIGURES.

By Dr. JAMES DOUGLAS, Honorary Fellow of the ROYAL COLLEGE of PHYSICIANS, LONDON; and Fellow of the ROYAL SOCIETY.

LONDON:

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A Catalogue of the Authors that have described or mentioned the *Narcissus Japonicus*, or GUERNSAY LILLY.

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Johan-

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INDEX COGNOMINUM.

ALdinus (*Tob.*)	1625	*Gardiner* (*Jac.*)	1706
Bauhinus (*Joh.*)	1651	*Joncquet* (*Dion.*)	1659. 1666
Bauhinus (*Caſp.*)	1623	*Kempferus* (*Engelb.*)	1712
Beſlerus (*Baſil.*)	1613	*Liger* (*Ludov.*)	1706
Blair (*Pat.*)	1720	*Malpighius* (*Marcel.*)	1682
Boerhaave (*Herm.*)	1720	*Moriſon* (*Rob.*)	1680
Bradley (*Rich.*)	1718	*Parkinſon* (*Joh.*)	1640
Cæſalpinus (*And.*)	1538	*Paſſæus* (*Criſp.*)	1614
Chambers (*Gul.*)	1724	*Pontedera* (*Jul.*)	1720
Cluſius (*Carol.*)	1601	*Rapinus* (*Renat.*)	1665
Commelinus (*Joh.*)	1697	*Ray* (*Joh.*)	1688
Cornutus (*Jac.*)	1635	*Rea.* (*Joh.*)	1665
Drakenſtein (*Hen. Van.*)	1678	*Sweertius* (*Emman.*)	1612
Evelyn (*Joh.*)	1673	*Tournefort* (*Joſ. Pitt.*)	1700
Ferrarius (*Joh. Bapt.*)	1633	*Woodward* (*Joh.*)	1699

IN-

INTRODUCTION.

IN a Country, to which the only true Method of enquiring into Nature is intirely owing, and where all the Parts of Natural Philoſophy, as well as Hiſtory, are daily receiving ſo conſiderable Improvements, in proſecution of that Method, not only by thoſe whoſe Profeſſions engage them in ſuch Studies; but by great Numbers of others alſo, to whom a love of Knowledge, and a deſire of admiring the Wiſdom of the Almighty Creator, in the Works of Creation, are become as powerful Motives as either the Neceſſities of Life, or the Ties of Society can be: In ſuch a Country, I ſay, there is no need of an Apology for what I now offer to the Publick. The Skill and Contrivance of Nature ſhine forth as brightly in the OEconomy of the Vegetable Kingdom, as in that of any other Part of her Works; and the Study of Plants, ſuch eſpecially as are remarkable for the beautiful Structure of their Flowers, was never more in vogue amongſt us, than it ſeems to be at preſent.

THAT the *Guernſay Lilly* is of this Number, will, I believe, be diſputed by none, who have ever beheld it in full Bloſſom; and I hope, the Deſcription and Figures which I now give of it, will be ſufficient to convince thoſe who have never ſeen it.

It is now about fourſcore and ten Years, ſince *Cornutus* publiſh'd the firſt Account that ever was given of this Plant, under the Name of *Narciſſus Japonicus Flore Rutilo.* At leaſt if any Author has deſcribed it before him, it is in ſo imperfect and indeterminate a Manner, that by what they have ſaid, it cannot be certainly known whether they really meant our *Lilly* or not; as we ſhall ſee more particularly in its proper Place.

Cornutus's Deſign led him principally to the Conſideration of ſuch Plants, as are of the Growth of *Canada*, a *French* Settlement on the Continent of *North America*; but he has thought fit to include likewiſe in that Hiſtory, ſuch other Plants as had come to his Knowledge, which had not been taken notice of before him. Of theſe the *Narciſſus Japonicus* is one. His Deſcription of it is indeed ve-

ry far from being perfect, but that he really meant the ſame Plant with mine, is evident from every thing that he has ſaid of it; which the Reader will find inſerted in his own Words, under the ſeveral Heads of the following Account.

After *Cornutus*, the firſt Author by whom I find any mention made of this Flower, is our own Country Man *John Rea*, of *Kinlet*, near *Beudly* in *Worceſterſhire*. It is he who firſt called it the *Garnſay Lilly*, and indeed that is all he has ſaid about it, which is worth obſerving: For after telling us "that the *Narciſſus Virginianus La-*
" *tifolius flore purpuraſcente* beareth many Flowers on one Stalk, like
" ſmall *Lillies*, of a ſullen purpliſh Colour, never opening, and ſel-
" dom ſhewing the inner Sides of the Leaves in its natural Country;
" and he doubts will hardly live in ours: He adds, as it were only by
" the by, that of this Generation is the *Narciſſus* of *Japan* or *Garnſay*
" *Lilly*, which there proſpers, and bears in *October* Peach colour'd
" Flowers; and that the *Indian Daffadils* are all ſtrangers in *England*,
" except that of *Garnſay*.

Whatever it was in *England* at the time this Author wrote, it is more than probable, it was as great a Stranger to him, as any of the reſt: For had he ever ſeen it, it is impoſſible he ſhould not have taken more notice of ſo eſſential a requiſite belonging to a Floriſt, in a Book, which the Title would perſwade us is furniſhed with them all.

About this ſame time, Father *Rapin*, a learned French Jeſuite, in his Book of Gardens, deſigned, as his Society pretends, for a Supplement to *Virgils Georgicks*, put ſome part of *Cornutus*'s Deſcription into Latin Verſe. Concerning this Author it is ſufficient to obſerve, that as he has ſaid nothing new concerning this Plant, ſo he is known to have been a much better Humaniſt than a Botaniſt. His Verſification is allowed by every body to be very beautiful, and therefore I have thought it worth while to tranſcribe what relates to my *Lilly*, together with two *Engliſh* Tranſlations of it; the firſt by Mr. *Evelyn*, the other by Mr. *Gardner*.

Mr. *Evelyn* has every where render'd the Senſe of his Author exactly enough, but the Diction of Mr. *Gardner* is more refined, and his Verſes much more harmoniouſly turned.

Soon after this appear'd Monſ. *Jonquets* Catalogue of the Plants, in the Royal Garden at *Paris*, which had been juſt then reſtored and augmented at the Publick Charge, under the Direction of Monſieur *Vallot*, firſt Phyſician to *Louis* the XIV*th*. The *Garnſay Lilly* was too conſiderable a Plant, not to deſerve a Place there, and it is not improbable that they were ſupply'd with it, out of *Morinus*'s Garden; at leaſt it cannot have been very common at that time about *Paris*: otherwiſe Monſ. *Jonquet*, who appears by the Catalogue of his own Plants

Plants, publiſh'd a few Years before, to have been very curious in Flowers, could not have been without it.

Dr. *Moriſon*, and Mr. *Ray*, the next Authors in order of time who have mentioned the *Guernſay Lilly*, have both ſatisfied themſelves with barely copying *Cornutus*. One would have thought that ſo extraordinary a Plant, brought into *England* in ſo extraordinary a Manner, as ſhall be related in another Place, and thus as it were by chance made *Engliſh*, might have been thought worthy of a more particular Notice, by theſe two great *Engliſh* Botaniſts. But it is not in this inſtance only, that they appear to have been ſo wholly taken up, in ranking of Plants into ſeveral Claſſes, in dividing and ſubdividing them into innumerable Genera and Species, in inventing and improving the various Methods; that they could not allow themſelves the time to examine any Plant which had been any how Deſcribed before them, even the moſt Curious and Remarkable, with all the accuracy they deſerv'd.

Thus far therefore it is certain, that properly ſpeaking, there has been but one Deſcription ever given of the *Guernſay Lilly*; neither ſhall we meet with any more, if we look down from Mr. *Ray*, all the way to our own Times.

The great *Tournefort*, and incomparable *Boerhaave* have indeed told us, what Genus, Section, Claſs, and Order, this Plant ought to be ranked under; but as their Deſign is only to give us a methodical Index, or Catalogue of Plants, and a ſummary View of the ſeveral Genera's of them, we are not to expect from them particular Deſcriptions. The firſt makes the *Narciſſus Japonicus* of *Cornutus* belong to the *Claſſis* of Plants, *Flore Liliaceo*, to that Section of theſe, which are *Flore Liliaceo ex petalis Sex compoſito, cujus Calix abit in fructum*, and laſtly to the Genus of the *Lilio Narciſſi*.

Dr. *Boerhaave* ranks it under the *Plantæ monocotyledones foliis Seminalibus Carentes, Bracteatæ*; to the fourth Order of theſe, which are *flore hexapetalo Ovarium complexo*, and to the *Lilio Narciſſi* as the Genus: For all the reſt, both theſe Authors referr us to *Cornutus*.

Kempferus has ranked it under that Claſs of *Japan Plants*, which are remarkable for the Beauty of their Flowers, but he contents himſelf with giving us the Names it goes by in that Country; and obſerving that it is the *Narciſſus Japonicus* of *Cornutus*, to whom he referrs for its Deſcription, without ſo much as intimating the leaſt Suſpicion that theſe two Plants were not the ſame.

What Meſſieurs *Liger*, and *Bradley*, the only two remaining Authors who have ſo much as mentioned the *Guernſay Lilly*, have ſaid about it, relates chiefly to the Method of cultivating it to the beſt Advantage.

Advantage. Not having hitherto had an Opportunity of examining this Matter my ſelf, I have thought fit to inſert the Obſervations of theſe two Authors; together with ſome Letters of the ingenious Mr. *Fairchild* upon the ſame Subject.

From theſe Authors who have indiſputably all of them mentioned this Plant, I proceed to ſome others who are thought to have deſcribed it, but I am fully ſatisfied, have not.

Of theſe, *Cluſius* is the firſt in order. This Author has indeed given us an Account of two Plants, called by him *Narciſſus Latifolius Indicus rubro flore*, and the other *Lilio Narciſſus Hemerocallidis Valentinæ facie*, which agree in ſome things with our *Lilly*, but in many others they appear to be quite different; neither do his Figures of them at all reſemble it: The ſame thing is to be ſaid of the *Narciſſus Jacobæus*, ſo firſt called by *Cluſius*. This *Aldinus* has remarked to be a Plant quite diſtinct from his *Lilio Narciſſus Indicus*, and it is ſtill more ſo from my *Lilio Narciſſus Sarnienſis*.

I have heard it very confidently aſſerted, That *Aldinus* under the Title of *Lilio Narciſſus Indicus Rubeus*; and *Ferrarius*, by the Name either of *Narciſſus Indicus Liliaceus Saturato aut diluto colore purpuraſcens*, or *Narciſſus Indicus flore Liliaceo Sphæricus* had deſcribed this *Lilly*; and I own that I was once inclined to be of the ſame Opinion, but at preſent, I am perſwaded that they are altogether different; for reaſons which will plainly appear by the Compariſon of my Deſcription, with the Text and Figures of theſe two Authors.

I have conſulted as many other Botanical Authors, as I could reaſonably expect might have mentioned this Plant, but in none of them do I find either Deſcription or Figure that is not more different from it, than any of theſe that I have juſt now named.

The *Nobile par fratrum Johannes* and *Caſparus Bauhini*, I am very well ſatisfied had no knowledge of it; for if *C. B.* has mention'd it any where, it muſt be by the Name of *Narciſſus Indicus totus Ruber*, but then, he claſſes the *Narciſſus Indicus totus Sanguineus*, and *Narciſſus Jacobæus* as ſynonymous Terms for that, both which are known to be nothing like the *Guernſay Lilly*. And as for *J. B.* both his Deſcriptions and Figures of any Plant that comes in the leaſt near it, are all copied from *Cluſius*.

Sweertzius, *Paſſæus*, *Parkinſon*, and others, who have all written expreſly of Flowers, take no manner of Notice of this beautiful Flower.

Beſlerus in the *Hortus Eyſtetenſis*, the Authors of the *Hortus Malabaricus*, and *Commelinus* in the *Hortus Amſtelodamenſis*, have neither deſcrib'd nor delineated it. Thus

Thus I have laid before the Reader, in a few Words, the Botanical Hiſtory of the *Guernſay Lilly*, by which it is evident, that it has hitherto been but very imperfectly deſcribed in any Language, and never in *Engliſh*, nor by any *Engliſh* Author in *Latin*; and at the ſame time, I hope, that from the following Account of it, it will appear as evident, that no Plant in the whole flowery Race deſerves more to be deſcribed with Accuracy, Preciſion, and Exactneſs, than this. And that mine may the better anſwer all theſe Conditions, I have digeſted what my own Obſervations have furniſhed me with, under the following Heads or Titles, *viz.*

Nomen & Synonyma,	Name and Synonymous
Etymologia,	Etymology. (Terms.
Locus Natalis,	Place of Growth.
Radix,	Root.
Folia,	Leaves.
Caulis floriger,	Flower Stalk.
Perianthium,	Cover Flower.
Pedunculi,	Foot Stalks.
Vaſculum ſeminale,	Seed Veſſel.
Flores,	Flowers.
Petala florum,	Flower Leaves.
Stamina,	Chives.
Apices,	Pendants, *or* Sommets.
Stylus,	Stillet.
Melleus Liquor,	Liquor like Honey.
Cultura,	Culture.
Epilogus,	Concluſion.
Figuræ,	Figures.

What the Reader is to expect beſides, I have already acquainted him with in ſeveral Places of this Introduction. My Figures are all of them drawn from the Life, and the Deſcription compiled from the moſt accurate Examination I was capable of making during the ſpace of one Seaſon; what further remains, and eſpecially a delineation of the Structure of the Flowers viewed through a Microſcope, muſt be referr'd to the next. And in the mean time I moſt earneſtly beg of all Lovers of Flowers, and particularly the curious Gentlemen of the Iſland of *Guernſay*, that they would be pleaſed to tranſmit to me, any further Obſervations that may be made concerning this beautiful Plant. Which Favour I ſhall gratefully and publickly acknowledge.

I have only one Word more to add by way of Introduction, and it is this: Of all the numerous Tribe of Authors, Botanical Writers

 have

have in all Ages been the moſt deſervedly famed, for the honourable mention they have never failed to make of ſuch Perſons as were either Benefactors to the Gardens in which they were concern'd, who ſent them Specimens of curious Plants, or laſtly, in whoſe Gardens they had the good fortune of ſeeing any ſuch. *Cluſius* has immortalized the Names of Monſieur *Plateau*, and a great many others of his Friends, by owning he was obliged to them for ſeveral of the Plants which he has ſo excellently deſcrib'd. *Aldinus* has thought it neceſſary to acquaint us where he found the Plants, which he has examined, *viz.* in the *Farneſian* Gardens at *Rome*, *Ferrarius* in thoſe of *Tranquillus Romanûlus* of the ſame City, and *Cornutus* thoſe of *Johannes Morinus* at *Paris*. Did the Memory of *Gaſton*, Duke of *Orleans*, deſerve to be perpetuated upon no other ſcore, It will ever live in Dr. *Moriſon*'s Dedication of the *Hortus Bleſenſis* to King *Charles* the Second; and, to name no more, Dr. *Boerhaave*, in his late Hiſtory of the Phyſick Garden of *Leyden*, ſeems to have had nothing ſo much in view, as to publiſh to the World, the Names of thoſe Perſons to whom it is indebted, for any part of the vegetable Treaſure, which it contains at preſent.

As I have endeavoured to imitate theſe Great Authors, in the exactneſs of my Deſcription, I ſhould be loath to come behind them in point of Gratitude and good Manners. I cannot, therefore, let ſlip this Opportunity of acknowledging, that for the Flowers from which I principally took my Obſervations, I am obliged to the Right Honourable the Counteſs of *Hartford*, who did me the Favour to ſend me, laſt Summer, a conſiderable number of Roots, from her Ladyſhip's fine Gardens at *Marlborough*. They were planted for me in a proper Soil, by the skilful Hand of that expert Gardener, Mr. *Fairchild*, and they grew in Pots at my own Houſe, where the Parlour had all the Advantages of a Hot-houſe, ſo agreable to their Nature. There I had as full an Opportunity, as could be wiſh'd for in one Seaſon, of obſerving them in all their different States, and ſince that time I have ſeen ſeveral others at Mr. *Fairchild*'s at *Hoxton*, which I took ſufficient care to compare with my own.

A

DESCRIPTION

OF THE

GUERNSAY LILLY.

Nomen

Narciſſo-Lirion Sarnienſe:

OR THE

GUERNSAY LILLY.

Synonyma.

Narciſſus Japonicus rutilo flore.	Cornut.
Narciſſus Japonius ou Narciſſe du Japan.	Rapin.
Narciſſus of *Japan*: Or, *Garnſey Lilly.*	Rea.
Narciſſus Indicus Rutilo Flore ſcintillis aureis aſperſo.	Jonquet.
Purple Narciſſus of *Japan.*	Evylin.
Lilio-Narciſſus Japonicus rutilo flore.	Moriſon.
The *Guernſey-Lilly.*	Gardener.
Seki San *Sibito Banna* } *Japonicè.* *Doku Symira*	Kempfer.

LOCUS

LOCUS NATALIS.

Cornutus, whom we have already obſerved to be the firſt Author who has deſcrib'd the *Guernſay Lilly*, informs us likewiſe, that it is originally a Plant of *Japan*, and by what Means thoſe of them, which he had an opportunity of ſeeing, came firſt into *Europe*. *Johannes Morinus*, no doubt, a very curious Perſon, was at a great deal of Pains and Charge to have it brought from *Japan*, and cultivated it in his own Garden at *Paris*, and at length, on the 7th Day of *October* 1634. he had the Pleaſure of ſeeing it in full Bloſſom. *Inter omnes Narciſſos qui hactenus inviſi apud nos extiterunt, prima, ut Arbitror, Auctoritas nobiliſſimo huic generi debetur, quod paucis abhinc Annis ex Japonia allatum, ſtrenui admodum & nullis ſumptibus parcentis viri Johannis Morini cultura, tandem in florem proſiluit ſeptimo menſis Octobris anno Domini* 1634.

This Garden of *Morinus*, was famous for the uncommon exotic Plants contained in it, three and twenty Years after the Time that *Cornutus* here mentions, for Dr. *Moriſon*, in his *Hiſtoria Oxonienſis*, takes Notice of his having ſeen there the *Narciſſus Indicus ſphæricus flore Liliaceo of Baptiſta Ferrarius* in the Year 1657.

Kempferus ſaw it growing in *Japan*, where he remain'd two full Years, and by the variety of Names he found for it amongſt the Natives, it is plain they took no ſmall notice of it.

After theſe expreſs Teſtimonies of *Cornutus*, and *Kempferus*, it is ſomething ſurprizing that there ſhould be any Body found, to deny its being originally a *Japan Plant*; eſpecially they having no other pretence for ſuch a Conceit, but meerly that the Flower Leaves of the *Guernſay Lilly*, when viewed in the Sun, appears very much to reſemble that ſort of Varniſh call'd Japaning; but at this rate, the Truth of all Facts may be call'd in queſtion, by every Perſon who has fertility of Imagination enough to invent Conjectures and far fetch'd Similitudes, as Arguments againſt them: It ought rather to have been concluded, that ſince that Workmanſhip, as well as this Plant, came firſt from this happy Iſland, the firſt Invention of it might probably be owing to the beautiful Mixture of Colours and Sparkles obſerv'd on theſe Leaves.

That the original native Soil of this Plant was Japan, is further confirm'd from the manner of its firſt being brought into the *Britiſh* Dominions. This happen'd by a very ſingular, melancholy Accident; of which Dr. *Moriſon*, who no doubt, had it from ſome Perſons, than reſiding in *Guernſay*, gives us the following Account in the Book abovementioned. A *Dutch* or *Engliſh* Ship, 'tis uncertain which, coming from *Japan*, with ſome of the Roots of this Flower on Board, was caſt away upon the Iſland of *Guernſay*; the Roots were

were thrown upon a Sandy Shore, and ſo by the Force of the Winds and Waves, were ſoon buried in Sand: there they remain'd for ſome Years, and afterwards to the great Surprize and Admiration of the Inhabitants, the Flowers appear'd in all their Pomp and Beauty. The Lord *Hatton* was then Governour of that Iſland for King *Charles* the IId. His ſecond Son was by good luck a curious Perſon, and a great Lover of Flowers, and therefore he not only took care to tranſplant and cultivate this Flower himſelf, but ſent Roots of it to a great many Botaniſts and Floriſts in *England*. *Ejus Radices*, (ſays the Doctor,) *ex Japonia allatæ, & ex Nave Naufraga Batavica an Anglica incertum, ejectæ in littus Arenoſum Inſulæ* Guernſay, *ditioni Sereniſſimi Caroli Secundi ſubjectæ; ibi inquam Bulbi incuria projecti in littus Arenoſum, inter ſparta Maritima, & vento fortiore Arenam eò pellente, quâ demum prædicti Bulbi tecti poſt aliquot Annos ſummâ cum Incolarum admiratione, flores rutilos amplos & elegantes ſponte dedêre. Hoc flore detecto, aliquot annis poſtea radices plurimas communicavit Botanicis & elegantium florum cultoribus Dominus Carolus Hatton, filius natu ſecundus Nobiliſſimi viri Chriſtophori Hatton, Baronis de Hatton, & Inſulæ Gernſay prædictæ gubernatoris.*

This Honourable *Charles Hatton* was not only a great Patron of Botanical Learning, but eſteem'd ſo good a Judge of it himſelf, that the late famous Mr. *Ray* was not afraid to own that it was by his Advice and Direction that he undertook his great Hiſtory of Plants; and therefore thought him the moſt proper Perſon to Inſcribe it to.

He had receiv'd the firſt Tinctures of this valuable Branch of Natural Knowledge from Dr. *Moriſon*, while Director of the Royal Garden at *Blois*; and it was eaſy for a Perſon of his Genius to improve upon ſo good a Foundation. That Capt. *Hatton* had been Scholar to Dr. *Moriſon* is very well known to a great many People ſtill living, and further appears by the following Inſcription under his Coat of Arms upon Plate 1. Sect. 14. of the third Part of that Authors *Univerſal Hiſtory of Plants*. *Auſpiciis Honoratiſſimi & Doctiſſimi D. D. Caroli Hatton, Filii Domini Hatton, Baronis Liberi Angliæ, Scientiæ Naturalis Cultoris & Fautoris Eximii Authoris olim in Botanicis Diſcipuli.*

I am inform'd that this Gentleman died here in Town about two Years ago, in a very advanced Age.

ETYMOLOGIA.

FRom the Reſemblance that this Plant bears, both to the Lilly and Daffodil, it is very properly expreſs'd by a Word compounded of the Names of theſe two Flowers, *viz.* Ναρκίσσος καὶ λείριον *Narciſſus & Lilium.*

It is like the Lilly in its Flowers, Seed Veſſels, and Seeds; but differs from it in its *Vagina membranacea*, which incloſes the great bunch of Flowers. This the Lilly has not.

It agrees with the Daffodil in its Root, Leaves, and bare Stem or Flower-ſtalk; and alſo in that the Leaves come out after the Stalk. *Narciſſus Caulem prius deinde folia promit*, as *Cornutus* expreſſes it.

Dr. *Moriſon* introduces his Account of the *Lilio-Narciſſi*, by a Remark not unlike this, which therefore it will not be improper here to Inſert. *Quia flores producunt Liliorum inſtar, Capſulaſque pariter eorundem Capſulis ſimiles, ſeminaque itidem conformia Liliis; Lilii nomen in compoſitione præfiximus, quia denominatio omnis debet a nobiliore & potiore parte deſumi, atqui flores & Capſulæ ſeminales, ipſaque Semina primatum in omni genere obtinebunt. Sed quandoquidem radices omnium harum infra deſcribendarum Plantarum ſint perfecte bulboſæ, & multis pelliculis ſen tunicis Majoribus involventibus minores præditæ, Narciſſorum reliquorum more, non autem ſquammoſæ vel ſquammatæ, Liliorum proprie dictorum modo, nos aptiore titulo Lilio Narciſſos deſignavimus, quoniam utriuſque ſcil Lilii & Narciſſi Naturam participant, nomen ſic compoſitum obtinebunt.*

The reaſon of its being called *Narciſſus Japonicus* and the *Guernſey* Lilly, we have ſeen under the laſt Head, and *Sarnia* being the *Latin* Name uſed by *Antoninus* and other *Roman* Writers, to expreſs the laſt of theſe Iſlands, I have term'd this Plant *Lilium Sarnienſe*, it being of more conſequence to us to know that it grows naturally in *Guernſey*, than that it came originally from *Japan.*

RADIX.

THE Root of this beautiful Plant is of the bulbous tunicated Kind, made up of ſeveral ſmooth, thin, juicy Coats, Rinds or Shells, drawn or caſed over one an other, ſurrounded with two membranous Involucra; and ariſing, together with ſeveral Fibræ, from a round Baſis or Trunk.

To begin by the Involucra, which preſent themſelves firſt to our View, The External is a kind of dry Skin or Film, of a light brown Colour, thin and pretty ſmooth, covering the whole Bulb, and lower part of the Neck. The Inner is a much finer Membrane, of a whitiſh Colour, laid over the Bulb only: when wetted it is eaſily rubbed off, appearing of the conſiſtence and texture of a Cobweb, from whence I call it *Involucrum Arachnœideum*. When it is dry we may obſerve ſeveral Veſſels like Threads, running parallel, and at equal diſtances upon it, from below upwards.

Theſe Caſes being remov'd, the Root comes next to be examin'd; and it may be divided into two general Parts, the Bulb and Neck; both which being conſidered together, their Figure and Shape can be expreſſed by nothing better than by comparing it to that of a Glaſs Receiver, with a wide Belly, long Neck, and a flat Bottom ſuppoſed to be added to it.

The Figure of the Bulbs themſelves, where the Roots grow ſingle, is every where ſimilar, and reſembles an oblong Spheroid depreſs'd at both Ends. But having ſent out Off-ſets, of three or four Years growth, as the Bellies of theſe begin to ſwell, they preſs upon the Mother Bulb, and ſo flatten theſe Sides of it, which they touch. Thus according to the number of ſuch Off-ſets, theſe Sides are formed into ſo many different Plans, joyned at Angles more or leſs obtuſe.

When the Off-ſets are numerous, they receive the ſame Impreſſions from one an other, which they give to the Root from whence they ſpring. To be ſatisfied of this, we need only view a bunch or groupe of Roots that have ſtood ſome Years in the Ground without being tranſplanted.

In a full grown well-fed Root, the middle or thickeſt part of the Bulb is about ſix Inches in Circumference. Some Roots are bigger, but the far greateſt Part are much leſs.

In

In a bunch or cluſter of Roots, which I took out of the Ground about the middle of *November*, conſiſting of ſix Off-ſets, all proceeding from one Root, the ſeveral Circumferences and Weights were as follows.

1. The largeſt or Mother Root, meaſured ſix Inches and a Quarter.
2. The next five Inches.
3. Four Inches and a Quarter.
4. Four Inches and an Eighth.
5. Three Inches and three Eighths.
6. Three Inches and a Quarter.
7. Three Inches.

The Weight of the Mother Root was three Ounces and one Dram.

2. One Ounce, two Drams and an half.
3. One Ounce, one Scruple.
4. Six Drams and an half.
5. Half an Ounce and one Scruple.
6. Half an Ounce.
7. Two Drams and an half.

The narrow part of the Root which lies between the Bulb and appearance of the Leaves or Stalk, is the Neck, in which we may obſerve the Endings of four, five or ſix of the innermoſt Laminæ.

It is commonly about one Inch and an half in length, in ſome more, and in others leſs, according to the growth of the Plant.

Where it is biggeſt, it meaſures near two Inches in Circumference, ending ſomewhat narrower than where it began.

It is not round but flattiſh, being adapted to the figure of the Leaves or Stalk, that lie within it.

From this general View of the Root, it is now time to proceed to the particular Parts whereof it conſiſts, which are the Baſis, Tunicks, and Fibers.

The Baſis or lower part of the Root, called by the learned *Malpighi* (in Plants of this kind) *Truncus Radicalis*, is a ſolid and hard Subſtance. of a whitiſh yellow Colour, and round or circular Figure; from whence the *Tunicæ*, *Leaves*, *Stalk*, *Fibrillæ*, and *Off-ſetts* do all ariſe. This in all the breeding Roots is very large.

The Bulb itſelf, both Belly and Neck, is commonly made up of twelve Tunicks or Coats, that cover one another; being kept tight, and bound cloſe in their Places, by means of ſmall, ſhort, tranſverſe Fibres; together with a ſlimy, viſcid, roapy Humour, that moiſtens their Sides, and glews them as it were together.

Theſe Coats may very well be divided into roundiſh and longitudinal. The firſt are Six in Number, and form the belly and beginning, or biggeſt part of the Neck; the Coats that remain I call longitudinal, becauſe they are carried ſtreight up from the Baſis, within the other Six or Seven, and make the ſmaller part of the Neck; they immediately cover, ſupport, and ſtrengthen the Leaves like ſo many Caſes, ending in different Plans.

The top of each of theſe long Tunicks is tipt and lengthened out by a kind of dry, ſhrivel'd, thin Skin, or Film, with ſtreight Fibres, which is nothing elſe but the remains of the freſh Leaf continued with them. Theſe ſeveral Skins eaſily ſeparate from one another, and ſo appear tore or ragged, they ſeem deſigned for warm Coverings, to thoſe *Tunicæ* which lye under them, as the Involucra are to the Bulb.

On the inſide of all the Tunicks, eſpecially the ſix outermoſt, the ſame ſort of Veſſels are viſible, which we already took notice of, in the inner Involucrum.

In a flowering Plant, the Diſpoſition of theſe Tunicks is a little varied.

Both Leaves and Stalk are cover'd by nine Coats. When theſe are removed on the out ſide of the Stalk, there appears a half Coat, very thick, and bunching out a little at Bottom; but it grows thinner as it riſes higher, and the top of it is tipt with a thin dry Skin like the reſt.

The Leaves are cover'd a-part by two longitudinal Coats, which are much thicker at bottom than the other State; and indeed quite through, much ſtronger.

Between the beginning of the Stalk and the outermoſt of the proper Coats of the Leaves, there riſes up a Proceſs in form of a Wedge or Tongue, which is very broad, and thick at bottom, and grows narrower and thinner at top, between two and three Inches in length. This Proceſs ſeems to me to be what is left of the other Side of the Caſe, for the Stalk juſt mentioned, but why theſe two ſhould not have been continued as well as the other Coats, is, I own, to me as yet a Secret.

From the Edge of the Baſis, or Heart of the Root (as the Gardiners call it) ariſe eight, ten, or ſometimes twelve pretty large *Radiculæ* or *Fibræ* of a white Colour; ſome of them are about the bigneſs of a large Gooſe Quill, and ſix or ſeven Inches in length, and may perhaps, grow much longer when they are not confined in Pots: Others of them again, were a good deal ſhorter.

From each of theſe *Fibræ* there ariſe abundance of ſmaller *Fibrillæ*, or Strings, by all which the Plant draws its nouriſhment from the Earth it grows in. Theſe *Fibrillæ* are from one, to two, and three Inches in length.

Between theſe *Fibrillæ* or *Radiculæ*, we obſerve ſeveral ſmall blind Holes.

Upon taking a Root out of the Ground in the middle of *March*, when the Leaves were withering, I obſerv'd a great many of theſe *Fibræ* to be quite ſhrivel'd up and waſted.

Cornutus has informed us of nothing that belongs to the Root of this Plant, but that it is bulbous, and like thoſe of the other *Narciſſi ſub eſt Bulbus prioribus ſimilis.*

Kempferus tells us, that in *Japan* the Root is looked upon to be Poiſonous; and this is all he ſays about it.

FOLIA.

THE Leaves of all the Plants as well thoſe that Flower, as thoſe that do not, ariſe from the middle of the *Fundus* or very loweſt part of the Root, and are continued up through the Bulb, aſcending in a ſtreight Line, involved in all its Coats; three or four of which accompany them for about an Inch or more above it, ſerving for a Caſe to ſupport and ſtrengthen them, while tender and weake.

That part of the Leaves which is above the Root, is of a dark Willow Green, but withal they appear, it as were, ſhining or lucid.

That

That Part of them that lyes within the Root, is of a White Colour inclining to Yellow, a little before they leave the Sheath, and take on the Green.

They ſeem all ſmooth and ſoft the touch, and they are a little obtuſe or blunt at the ends.

In what has been hitherto mentioned all the Leaves agree, but there other things that are peculiar to them, according to the two different States in which they may appear.

In a flowring Plant the Leaves begin to Spier or come forth, about the latter end of *September*; they all aſcend by one ſide of the *Caulis*, and are never obſerv'd to ſurround it.

In two Plants that flower'd late this laſt Seaſon, the Leaves of the one were eight Inches high, and thoſe of the other, ſeven, on the 30*th*. Day of *Nov.* *Decem.* 25. the longeſt meaſur'd 15 Inches, and the other a little above 13. *Feb.* 3. the longeſt Leaves meaſured juſt 22 Inches, the warmth of the Parlour having drawn them out to this great and unuſual Length. The Tops of theſe long Leaves began to wither and dry, about the latter end of *February*, and then I pulled them out of the Pots where they grew, they were both about half an Inch broad; and in the firſt they were four in Number, in the other five. Mr. *Fairchild* aſſured me he ſeldom obſerv'd above four, and never ſix in a flowring Plant.

In Mr. *Fairchild*'s Garden, the Roots that flower'd laſt *Autumn*, had Leaves from 11 to 13 Inches in length, *March* 7. 1724-5. ſtill freſh and very green; and 3 quarters of an Inch in breadth.

In a Plant that does not flower, the Leaves appear above Ground about the middle or end of *Auguſt*.

The number of Leaves in ſuch Plants is uncertain, differing according to the Age of the Root: A *Surculus* or *Off-ſett* of the firſt Year, has for the moſt part, but one long narrow Leaf. I once obſerv'd two in a flowring Plant, and ſometimes the ſecond ſhews no Leaf above the *Tunicæ*. About the latter end of *November*, as the Roots increaſe in Age, they have gradually two, three, four, five, and ſometimes even ſix, or ſeven Leaves; but I do not know if ever they exceed that Number; and I am apt to believe that when a Plant has once ſix Leaves, the Year following it will certainly Flower.

I cannot determine the Heighth or Length of the Leaves, having not hitherto had an opportunity of obſerving them ſufficiently in all their

their different Ages. In a fine groupe or cluſter of Roots, that came laſt Summer from *Guernſay*, and had ſtood here for ſome time in the Ground, and afterwards in a Pot in my own Parlour, the Mother Root had ſix Leaves, the longeſt of which, on the *9th* of *November*, meaſured full nine Inches, and was above half an Inch in breadth; and by the *30th* of the ſame Month, it was eleven Inches high, having gained two Inches in three weeks time.

Cornutus has taken notice of the Leaves of flowering Plants only, and he has ſaid but very little, even about theſe: According to him they do not appear till the Stalk decays, and they are of a pleaſant green Colour, *folia vero non niſi tabido Cauli erumpunt, quorum color non glaucus nec obſcurus ſed grata viriditate renidet.* Whether by the time the Leaves appear, the Stalk may not be in a State of Decay, I ſhall not diſpute; but 'tis certainly a conſiderable time after, before any ſuch thing becomes ſenſible either to the Eye or Touch.

CAULIS FLORIGER.

THE *Caulis*, Stalk or Flower Stem ariſes, as has been already obſerved from the hard Subſtance in the bottom of the Bulb; and about the middle of *Auguſt*, or ſometimes later, it begins to ſprout out, or appear above the top of the Root, being very ſmooth, and without Leaves during its whole Length.

That Part of the Stalk which is within the Coats of the Root, is of a whitiſh Colour: for about three or four Inches above the Root, it inclines to a dark Red with a Purple caſt; but afterwards that inſenſibly paſſes into a Green, which is continued upon all the reſt of the Stalk.

When it dries and withers, the Green is changed into a kind of Straw-colour, and the Purple-red into a lighter.

The Figure of the Stalk is not exactly Cylindrical, but rather that of a Solid, whoſe Baſis is an Ellipſe, for it is a little depreſſed or flattened on two oppoſite Sides, and when it begins to dry, after the Flowers are decayed, it becomes thin, with two or three longitudinal Ridges upon it.

The length of the Stalk, in a Plant in full Bloom, is always between thirteen and ſeventeen or eighteen Inches, meaſured from the top of the Root, to the riſe of the Perianthium. The length of the Stalk, whence I took my Figure, was juſt fourteen Inches. The Circumference at the top of the Root is exactly an Inch, and towards

towards the upper part of the Stalk, three quarters of an Inch, in ſome a little leſs.

Immediately above the Root, the longeſt Diameter of it is ſeven ſixteenth parts of an Inch, and the ſhorteſt five ſixteenth Parts.

Juſt under the riſe of the Flowers, the longeſt Diameter is a quarter of an Inch, the ſhorteſt three ſixteenth Parts.

The Stalk is without any hollow or cavity in the Middle, and very ſtrong in proportion to its Bigneſs; being thus enabled to bear up and ſupport that large Boûquet or noble bunch of Flowers, with which it is, for ſo long a Time, adorned: However we often meet with it bent in one or more Places, and inclining downwards.

Cornutus deſcribes the Stalk to be without Leaves, a Foot high, green on the upper Part, and below marked with innumerable purple Specks. *Spectabilis Thyrſis per Initia nudus foliis, paulatim ſeſe in pedis altitudinem ſubrigit; ſuperiore parte virens, inferna mille atro purpureis notis infuſcatus.*

PERIANTHIUM.

WHile the Flowers of this beautiful Plant are a forming, they are covered and incloſed by a ſort of Vagina or Caſe, made up of two diſtinct membranous Films, ariſing round the upper part of the Stalk, whereof one is much larger than the other.

They are of a reddiſh Colour, and a triangular Figure, the Baſe (*i. e.* where the Perianthium adheres to the Stalk) being half an Inch long, and the perpendicular Heighth one Inch three quarters.

Before the Flowers are blown, the Perianthium appears of the ſhape of a Tulip before its blown, but when theſe arrive at a certain bigneſs, they burſt open the Caſe, and it falls back in two Pieces.

Between the two membranous Films, and the beginning of the Pedunculi, there are nine, and ſometimes more ſmall and narrow Filaments, that hang down like ſo many Threads or Laciniæ, of the ſame Subſtance and Colour with that of the Perianthium. Theſe continue on the Stalk till the Flowers are quite withered and decayed.

Cornutus has only mentioned the figure of the Perianthium, and that not very diſtinctly neither: *florum gemmæ —— quæ prius oblonga & rotunda quadam vagina membranacea celabantur.*

PEDUNCULI.

THE Foot Stalks that ſupport the Flowers, and are always equal to them in Number, ariſing from the top of the *Caulis* or Flower-Stem; thoſe neareſt the Center almoſt in a right Line with the Stalk, the reſt ſpreading outwards, at a greater or leſs Angle with the firſt, in proportion to their Diſtance from them.

Their Colour is the ſame with that of the *Caulis*.

They are not all of the ſame Length, in the ſame congeries of Flowers: The longeſt, meaſured from the *Perianthium* to the *Vaſculum Seminale*, I have commonly found to be 1 Inch 5-Eighths, the ſhorteſt 1 Inch 1-Eighth, and all the reſt between theſe two.

Their Figure comes near that of Priſm generated by a Triangle, whoſe Baſs is 3-16*th* Parts of an Inch, and Perpendicular Altitude 1-8*th* Part.

All that can be learned from *Cornutus's* Account of the *Pedunculi* is, that there are ſuch belonging to this Plant, and that their Number is equal to that of the Flowers. *Florem gemmæ totidem petiolis herentes.*

VASCULUM SEMINALE.

AT the top of each Pedunculus we obſerve a ſhort, thick, knobby Part, which conſtitutes the *Vaſculum ſeminis*, or Seed Veſſel.

Its Colour is much the ſame with that of the Flower Stem and Pedunculus.

The Figure of it is nearly that of a triangular Priſm, a little depreſs'd near the Bottom and Top.

The Heighth is about a quarter of an Inch, as is likewiſe the Baſe of the generating Triangle, meaſur'd at the wideſt Part, and the perpendicular Altitude three ſixteen Parts of an Inch.

The Inſide of the Seed Veſſel is plainly divided by membranous Septa or Partitions, into three Loculamenta or Cells, each of which is filled with ſmall white Seeds in great Numbers.

The

The Seeds of this Plant never come to any Perfection in theſe Northern Countries, neither does the Seed Veſſel at all ſwell, after the Flowers are decayed; but on the contrary ſhrinks and dries up.

Cornutus has taken no manner of notice of this Part of the Plant.

FLORES.

MAny curious as well as entertaining Obſervations and Figures, might have been made concerning the gradual explication and unfolding of the Flowers, while they remained as yet in their infant State, wrapt up in the Perianthium, and alſo from the time that Membrane began to open, till they arrived at their utmoſt Perfection. But having neglected theſe in the proper Seaſon, I am obliged to defer them till another.

At preſent, therefore, I ſhall conſider them only after they are fully blown, obſerving however, by the by, that the Flowers begin to appear about the latter end of *Auguſt*, ſometimes ſooner or later, according to the Seaſon, the ſtrength and fulneſs of the Root, and above all, the warmth of the Place where they ſtand: They come forth gradually, for in one of my Lillies, I obſerved three Weeks between the full opening of the firſt and laſt Bloſſoms.

The number of Flowers in each Plant is not always the ſame, one of mine had eleven, the other nine. At Mr. *Fairchilds* I ſaw one with ſeven, another with eight, and a third with ten.

The largeſt Circumference of each Flower, is about ſeven Inches, the Diameter of it two Inches and a quarter.

The Circumference of the whole congeries or bunch of Flowers belonging to one Plant is different, according to the number of theſe, but their ſituation, with reſpect to one another, is always pretty much the ſame, for when view'd altogether, they appear to form a large and beautiful ſegment of a Sphere, whoſe Center is ſome where near the Origine of the Pedunculi.

The Flowers continue in full Bloom for about ſix Weeks, and then begin to decay and contract, and at laſt quite wither and dye; and ſo remain in a fading Bloom about one Fortnight longer.

Cornutus has obſerv'd, that there is ſometimes nine or ten Flowers upon one Stalk, diſpoſed in form of an Umbrella. *In Thyrſi faſtigio Novem aut decem florum gemmæ in Umbellam diſponuntur.*

PETA-

PETALA FLORUM.

EACH Flower is made up of ſix Petala or Flower Leaves, and from thence it is, that our Lilly comes to belong to the Claſſis of Plants, *flore Liliaceo Hexapetalo.*

Theſe Petala begin by a kind of narrow ſhort Neck, called commonly *Unguis*, from a whitiſh, ſoft, juicy Subſtance, which lies immediately upon the *Vaſculum ſeminale*, and from whence the Stamina do likewiſe ariſe.

This middle Subſtance has been but very indiſtinctly taken notice of by Botanical Writers, before *Pontedera*, and by him, on account of the uſe he aſſigns to it, of which anon, it is termed *Receptaculum.*

The upper and inner Part of it has been by other Authors termed ſometimes *Floris Umbilicus*; and that part of it, through which the Stylus paſſes, *Centrum Umbilici.* And in this Plant, regard being had as well to its apparent Uſe, as to its Figure, and Situation, it cannot be more properly expreſs'd, than by calling it, *Baſis ſive Umbilicus floris.*

Three of the Petala run in a ſtreight Line with the Angles of the Seed Veſſel, and ariſe a little lower and further out than the others, which are oppoſite to the flat Sides of it.

A full blown Petalum is one Inch three quarters long, but when the Flowers begins to open, and juſt ſhow the Apices coming out, it is only one Inch and three eighths.

The greateſt part of it is of an equal Breadth, *viz.* three eighth parts of an Inch, but it terminates at laſt in a Point, beginning to grow narrow about half an Inch before it ends.

The ſurface of both ſides of the Flower Leaves is exactly ſmooth and even, without the leaſt Roughneſs. On the greateſt part of the upper Side, there is a kind of Sulcus or Hollowneſs, and on the Backſide a ſmooth Ridge, formed by the Coſta or Rib that runs through it lengthwiſe.

They run ſtreight for ſome ſpace, and afterwards the Point turns gradually, firſt back, then inwards and upwards, not unlike the Mountain or Martagon Lilly, but without making near ſo full a Circle.

The

The Edges are ſmooth from their beginning to the place where the Patala turn down, and from thence to their Extremity, they appear as if they were curled or pinched. This alteration in the Edge is not eaſily diſcerned while the Flower Leaves lie ſtreight in the *Perianthium*, but as ſoon as they are full blown the Pinch is very plain.

I am at laſt come to the moſt beautiful and charming part of this Flower, which is its Colour. This, I confeſs, I am not able to deſcribe with that Accuracy and Livelineſs which it deſerves; however in the main, I may venture to ſay, that each Flower, while in its prime, looks like a fine gold Tiſſue, wrought on a roſe-colour'd Ground; but when it begins to fade and decay, it looks more like a ſilver Tiſſue, on what they call a Pink Colour.

When we look upon the Flower in full Sun-ſhine, each Leaf appears to be ſtudded with thouſands of little Diamonds, ſparkling and glittering with a moſt ſurprizing and agreable Luſtre; but if we view the ſame by Candle-light, theſe numerous Specks or Spangles look more like fine gold Duſt.

What that uncommon Appearance proceeds from, or how to account for it, I own I cannot tell, but muſt leave it to others of better Judgment; however ſince it is very certain that there is nothing to be ſeen without the help of the glorious Rays of the Sun, or the adventitious Light of a Candle, on either ſurface of the Leaf, it would ſeem as if it were owing to ſomething contained between theſe: And why not to ſome *Globules* in their circulating Juice, through the minute Veſſels which the late Improvements in Botanical Anatomy have diſcovered to us? And what ſeems to confirm this Conjecture, is an Obſervation which I have made, that when the Flower Leaf is fading, theſe *Micæ* or Sparkles do not ſhine with half the Vivacity and Brightneſs, as when it is in its prime and ſtate of Perfection: The Juices then being quite altered, or almoſt ſpent and exhauſted, ſo that the Spangles become leſs lively.

But to be more particular, the narrow neck of each Petalum, is of a whitiſh Colour, and from thence upwards, about the middle of the Leaf, on the Inſide, there runs a Streak of a deep Scarlet, which being about one Inch in length, before it is inſenſibly loſt; all the reſt of the Leaf is much of the ſame Colour as I have deſcribed it above.

The backſide of theſe Petala, is chiefly of a paler ſort of red or Pink Colour, but the *Coſta* or Rib is much whiter.

A Friend of mine, who is very nice in diſtinguiſhing of Colours, aſſures me, That in this Flower there is a beautiful complication of different ſhades of Red, that all follow one another: For when it is in its Prime, there may be plainly diſcerned in it. 1. A Carnation. 2. A pale Scarlet. 3. A fuller Scarlet. 4. A Modena. And 5. a Crimſon. In ſhort, the whole Flower together looks like a gold Tiſſue with a velvet Pile, when view'd in the Sun-ſhine.

When the Flower had ſtood in Bloom about ſix Weeks, it began to decay, and the Colours to fly off; and then it appeared more like a ſilver Tiſſue upon a prince Colour, that is, a Red out of Grain, being fulleſt towards the Middle, and paleſt toward the Edges.

But as the Flowers begin to contract, ſhrivel, and wither, then the Petala aſſume a deep Crimſon Colour, which continues till they quite dry away.

The Colours of the Petala being that principally in which the Beauty of this Plant conſiſts, I ſhall ſubjoin to *Cornutus*'s Account of theſe, the manner in which other Authors, ſince his Time, have thought fit to expreſs them.

Cornutus begins by obſerving, that if the Plant ſtands in a good Soil, each Flower has ſix *Petala*, two Inches long each, and with a ſmall Sulcus running along them. That they are reflected like thoſe of the Martagon Lilly, and draw at laſt to a Point. That the Colours are ſo extreamly Beautiful and Fine, that it is impoſſible to imitate them, but they come ſomething near to that of Cinnabar, or the fineſt ſort of Gum Lacca. This Author takes notice likewiſe of the Spangles that appear in the Leaves when view'd in the Sun. *Dum Gemmæ florem patefaciunt in ſex folia deduciſolent, ſi potiſſimum planta hæc reſolutâ & pingui humo ſeratur, nam ſi ſicca & confecta poſita ſit, ſoli macies plerunque nonnullos uno aut alio folio mutilat . . . . Singula cujuſque floris folia duas uncias ſunt longa, admodum anguſta & exiguâ veluti lacunâ ſulcata. Juxta floris centrum brevi cacumine gracileſcunt, extrema parte reflexa reſupinantur (pro more Lilii Montani quod Martagon vocant.) Color floris eſt Cinnabaris aut laccæ elegantioris, vena ſanguinea tamen lacunarum media diſcriminante . . . . Unus odor abeſt, ejus defectum Natura ſupplevit vivacitate coloris, quem non modo pigmentorum mixturæ Artificio quiſquam aſſequi nequit, ſed nec ullis hactenus floribus ſimilem conceſſiſſe naturam obſervatum eſt. Nam præter eximium hunc colorem quo intuentium obtuitum hebetat; ſi forte ſerenus dies affulſerit, floremque radiis ſol meridianus illuſtraverit, mille velut ſcintillas evibrat, quos pertinax oculus inconnivenſque vix momento ſubſtineat.*

RAPIN.

RAPIN.

Eſt etiam extremo qui nuper venit ab orbe
Narciſſus flores lucenti concolor oſtro
Auratiſque litus maculis, ceu ſparſerit imber
Aureus egregium texto ſub murice florem
Qui poſſit tyrios foliis hebetare tapetas.

EVYLIN.

Purple Narciſſus *of* Japan *now Flow'rs,*
Its Leaves ſo ſhine as if with golden Show'rs
It had been wet, which makes it far outvy
The Luſtre of Phenicean *Tapiſtry.*

GARDENER.

Late from Japan's *remoteſt Region ſent,*
Narciſſus *came arrayed in ſcarlet Paint;*
Rich ſpots of Yellow ſtain the precious Flow'r,
As if beſprinkled with a golden Show'r.
The radiant Tinctures may with Tap'ſtry vie,
And proudly emulate the Tyrian dye.

REA.

The Garnſey Lilly *bears in* October *Peach-coloured Flowers.*

BRADLEY.

The Guernſey-Lilly *has hardly its equal for Beauty among the flowering Race. The Bloſſoms are large, and not unlike thoſe of the Lilly in their make, ſeemingly powdered with gold Duſt upon their Roſe-coloured Petals.*

STAMINA.

THere are commonly ſix Stamina in each Flower, but I remember I once obſerved ſeven beſides the Stylus.

They are all of one Colour, *viz.* a lighter Scarlet than the Petala, and when they begin to fade, they become ſomething paler.

I have already obſerv'd, that they proceed from the Umbilicus, on the inſide of the Petala.

Their Figure inclines to be round, only two oppoſite Sides of them are a little depreſſed. They are thicker at Bottom than at Top, towards which they run gradually tapering.

The longeſt two (for they are moſt commonly paired) are in ſome Flowers two full Inches, in others about one eighth part of an Inch leſs. The two ſhorteſt are one Inch and a quarter, and the reſt, between theſe two Extreams.

Cornutus takes notice, that the Stamina are ſix in Number, that they are longer than the Flower Leaves, and of a paler Red. *Sex ſtant in mediò Filamenta, foliis longiora, & pallidius Rubentia.*

APICES.

THE Apices, Sommets or Pendants are alway equal in Number to the Stamina, on whoſe pointed Extremities they hang in ſo eaſy and looſe a Manner, as to be moved or ſhaken by the leaſt breath of Wind.

Each of them is ſeemingly double, having a deep Sulcus or Furrow running along their under Side.

Upon their firſt appearing after the Flower is blown, and for ſome Days longer, they are all of a deep Crimſon, or rather Purple Colour. Afterwards they look of a whitiſh Grey, which proceeds from the *Farina fæcundans*, with which they are then loaded, being of that Colour. As this Duſt falls off, they begin inſenſibly to contract and ſhrink, and become very ſmall at laſt, and of a black Colour.

When

When theſe trembling Pendants are at the biggeſt, they are three Inches and one eighth Part in length, and one eighth Part broad or thick.

Cornutus mentions only the Number and Colour of the Apices. *Filamenta totidem Apicibus atro purpuræis ornata.*

STYLUS.

THE Stylus of each Flower ſprings by a threefold Beginning, from the three Cells of the Vaſculum ſeminale, paſſing thro' the center of that Subſtance from whence the Petala ariſe, in the very middle of the Stamina which ſurround it.

It is of the ſame Colour with that of the Stamina, *viz.* a light Scarlet.

It is apparently a hollow Tube, and is wider at bottom than at top.

At firſt it is near of an equal heighth with the Apices, but as ſoon as moſt of the male Duſt is ſhed, and there is no more occaſion for its Reception, it grows about a quarter of an Inch higher, being then about two Inches and a quarter.

'Till the Apices are become very ſmall, and the Flower begins to change its Colour and fade, there is nothing to be ſeen on the extremity of the Stylus, but then it appears crowned with a ſhort hairy kind of Subſtance, like a tuft or pile of Velvet, of a greyiſh, yellow Colour, and a triangular Figure.

The Stylus ſtands a good while after the Petala and Stamina are decayed.

Cornutus has not mentioned the Stylus at all, neither has he ſo much as included it in the Number of the Stamina.

MELLEUS LIQUOR.

DUring all the time that the Flowers continued freſh and blooming, and even after they began to decay, I never failed to obſerve upon the outer Surface of the *Umbilicus* or middle Subſtance at the Root of the *Petala* and *Stamina*, a few ſmall Drops of a tranſparent, clear, and viſcuous Subſtance, ſweet to the Taſte, and of a perfectly liquid Conſiſtence, like that of a thin Syrup.

Not believing that this *Melleous Liquor*, as it may be very fitly called, could be peculiar to this Plant only, I judged it worth while to conſult a good Number of the moſt accurate Botanical Writers, to ſee how they had accounted for what I then thought to be a very ſurprizing Phænomenon: And as amongſt all thoſe I had recourſe to, (one of whom was our learned Country Man Dr. *Grew*) there are but very few who ſeem to have ever obſerved it, the Reader I am perſwaded, will willingly allow me a ſhort Digreſſion, in order to lay before him what theſe few have told us about it.

Cæſalpinus, to whom the World owes the firſt Hints of more Diſcoveries in Nature, than they are willing to allow him the Credit of, is the firſt that I can find to have remarked this Liquid Subſtance in Plants. Talking of the wonderful Contrivance of Nature, for the Security and Protection of the Seed, eſpecially in its Embryo State; he tells us, *Flores igitur partim neceſſitate partim ad tuendos fructus incipientes dati ſunt, ex neceſſitate quidem, quoniam turgente planta, ut in Venere ſolent Animalia, efflari neceſſe eſt aliquem ſpiritum, non enim ſine ſpiritu fit ſeminis eruptio; quod autem ex hujus modi ſubſtantia flores Orti ſint, manifeſtum eſt; id enim indicant & ſubſtantiæ tenuitas qua conſtant, & odores quos ut plurimum Spirant; indicat & Mellea dulcedo, quæ in pleriſq; reperitur, quamq; apes ſeligentes in ſuos alveolos recondunt, ut enim mel Æreum ex percoctâ a ſole exhalatione naſcitur, roris modo ex aere decidens, ſic ex plantæ halitu percocto, qua parte egreſſum habet, veluti ſublimatum floris Concamerationi & ſtaminibus hæret alterum genus mellis quod apes colligunt & favis reponunt.*

From this Paſſage we learn with relation to our preſent Subject, That according to *Cæſalpinus*, ſuch a ſweet Liquor or Honey as I have deſcribed, is to be found in moſt Plants; that this is what the Bees carry off from them, and of which their Honey is made; that it is nothing elſe than the more ſpiritous Parts, exhaled from the Juices of Plants, or rather thruſt out from them, by the Force and Preſſure of the ſucceeding Sap: And laſtly, That the Place where it is found, is the *floris concameratio*, which may either mean the whole Cavity of the Flower, or only the Bottom of the Inſide of it. From what the

Author

Author adds concerning the *Stamina*, and what I always experienced in my Plant, it is probable he meant the laſt of theſe.

The accurate *Malpighi* has not ſuffered this part of Flowers to paſs unobſerved, tho' as 'tis evident from many other Places of his excellent *Anatomy of Plants*, *Cæſalpinus* may perhaps, have led him to the Conſideration of it: *Mirabile eſt*, ſays he, *quod natura quaſi conchas in florum foliis excitavit quibus mel cuſtodiret, ita in Corona Imperiali, Lilio Perſico & Ranunculo miramur. In hujus interiore parte non longe ab implantatione, concha rotunda obſervatur, quæ melleo diaphanoq; ſemiconereto ſucco repletur, hanc mire cooperit velabrum. In Corona Imperiali fovea hæc exterius labro Ambitur, & deorſum pendulæ Semiſpherica appenditur gutta.*

Interdum dubitavi an tenuis quædam adſit membranula contentum icorem coercens, ne deorſum effluat, applicato tamen digiti extremo, a forvea rapitur, ſicut accidit in reliquis aquæ & fluidorum guttulis quæ ſuſpenſa pendent: Hinc meditari poſſumus melleam hanc ſubſtantiam non exterius advenire, ſed ex ſucco intimius concocto hujus modi congeri materiam.

In digitali pariter prope umbilicum melleæ ſubſtantiæ aliquot guttæ recolliguntur.

That *Malpighi* here, means the ſame Liquor with *Cæſalpinus*, is apparent, both from the Qualities he aſcribes to it, and the way he ſuppoſes it to be produced, and although according to the Method he follows in the Anatomy of all the Parts of Plants, he has given examples of it but in three different Flowers; yet he is of Opinion, that it generally belongs to all.

The Place he aſſigns to it in the *Digitalis*, and which, no doubt, he thought common to that with a great many other Plants, is the ſame with that obſerved by *Cæſalpinus*; for what *Malpighi* terms *prope floris umbilicum*, an Expreſſion frequently to be met with in him, can mean nothing elſe than the *floris concameratio* of the other.

But nevertheleſs, to the Phænomena of this Liquor, taken notice of by *Cæſalpinus*, he has added two more; the firſt, that it is Tranſparent, and the ſecond, that it is lodged in many Flowers, in a *Concha* or *Fovea*, *i. e.* a round or oblong Cavity, near the Origin of the *Petala*; and from whence perhaps, it flows out over all the Surface of the Calix. This Receptacle I am apt to think, is not always to be plainly diſcovered by the naked Eye, and as I have not as yet, viewed any Part of my *Lilly* through a Microſcope, I cannot determine whether it be found there or not.

Cæſalpinus

Cæſalpinus has aſſigned one uſe this Liquor is deſigned for, *viz.* to ſupply the Bees with Materials for their Honey; but *Malpighi*, whoſe cautiouſneſs in framing Hypotheſes concerning the final Cauſes of Things, is not the leaſt beautiful Part of his Character, has advanced nothing at all about it, but only that it is a wonderful appearance.

Dr. *Woodward* in a Memoire preſented to the *Royal Society*, concerning Vegetation, which both for the accuracy of the Experiments it contains, and the juſtneſs of the Concluſions drawn from them, ought to be reckoned a Pattern and Standard for all Philoſophical Enquiries, has endeavoured to account Mechanically for the Production of theſe Liquors, or Exſudations of Plants, but fixes no certain Receptacle for this we are now upon. It is certain from repeated Experiments he has made, that the far greateſt Part of the Juices, that enter by the Roots of Plants, is tranſpired through the Pores of them; and as ſome Particles of this Matter may be ſo far attenuated and ſeparated from one another, as to be ſpecifically lighter than the Air, and ſo will mount up into the Atmoſphere; ſo there may be other Parts of it ſo groſs and heavy, as not to be able to reach any further than the Surface of that Part of the Plant, through which they tranſpired: They will conſequently remain and ſettle there; and from ſuch Particles condenſed, it is very natural to think this and other ſuch Liquors are formed. This Obſervation and Reaſoning of the Doctor's, concerning the manner in which this Liquor is produced, is much more ſatisfactory than what either *Cæſalpinus* or *Malpighi* have told us about it; but however contradicts no part of what this laſt named Author has advanced.

The next in order of time, who has ſaid any thing concerning this *Melleous Liquid* is Dr. *Blair*, and according to him it is a part of Plants of very great Importance in Vegetation. After obſerving from Mr. *Bradley* that there is a Glutinous Matter on the tops of the Styli, which may be capable of receiving and holding ſome part of the *farina fœcundans*, as it falls from the *Apices*; he adds, I go ſo far in with Mr. *Bradley*, that I ſhall put him in mind of another Contrivance for that purpoſe, of which, I doubt not, he is already ſenſible, *viz.* of the *Pelvis*, ſo to call it, or Ciſtern, ſituated at the Root or Origin of each *Petalum*, filled with a viſcuous Liquor which continues there, and never exceeds its bounds ſo long as the *Petalum* is in health; for ſince the *Apices* here are ſo artfully fixed, that they turn every way with the leaſt Wind, as Mr. *Moreland* juſtly obſerves, when they burſt and the *Farina* is driven to and fro, tho' it cannot ſo eaſily enter the narrow Tube, yet it may conveniently be blown up towards the Origin of the *Petala*, where it is ſtopped or ſtay'd by this Viſcoſity, till it has perform'd its office.

Mr. *Fairchild* being perſwaded that this viſcuous Liquor did ſome way or other contribute towards the fructifying of this Plant *viz.* the

Corona

Corona Imperialis; but not being ſenſible how it did it, try'd the Experiment of wiping it off, ſo ſoon as it was depoſited in the *Pelvis*; and the Flower ſo ſerved had no ſucceeding Fruit.

The way I account for that, is, the Humidity being removed, the *farina* is no ſooner blown upwards, than it immediately falls down without furniſhing any effect; and that which confirms this is, becauſe both Tulips and Fritillaries frequently have this *Pelvis* or *Baſin*, yet it is for the moſt part dry and empty, becauſe their Flowers being erect, eſpecially the former, they have no ſuch need of this Liquor to retain the Duſt; for the Rain having immediate acceſs to them, may waſh the Duſt towards the Origin of the *Patala*, where it can remain till it has done its Work: Where as the Rain having no acceſs to the inner Surface of the Flower of the *Corona Imperialis*, it is naturally endowed with this Humidity depoſited there by ſeveral excretory Ducts, in order to render it fit for the Purpoſe. *Malpighi* takes notice of this Singularity in this Flower, but aſcribes no ſuch uſe to it.

In this Account there is nothing new concerning the Receptacle of this Liquor, for the *Pelvis* or *Ciſtern* mentioned in it, is undoubtedly *Malpighi*'s *Concha*, only under a different Name; but concerning the Liquor itſelf, this Author has taken notice of ſeveral Things not to be met with elſewhere.

In the firſt Place he tells us, that it is Viſcuous or Glutinous; and I always found it ſo in my Plants.

This Liquor, he ſays, never exceeeds the Bounds of the *Pelvis*, while the Plant is in Health. With reſpect to the *Corona Imperialis* this, perhaps, may be true, but of all Plants it certainly is not, for I obſerved the contrary very often in my own.

Again, *Malpighi* talks of this Liquor as belonging to all Flowers without Exception; but according to Dr. *Blair*, erect Flowers are very often without it, and their *Pelvis* or *Concha*, may be perceived to be empty.

Laſtly, the Uſe he aſcribes to it is not only new, but very conſiderable; and Mr. *Fairchild*'s Experiment, as well as the Obſervation he makes concerning erect Flowers, are ſo far Arguments for the Truth of it, as to make it at leaſt deſerve a further Enquiry. But I cannot help remarking, that if inſtead of confining this Viſcuous Liquor to the Bounds of the *Conchæ*, he had taken notice of its being ſpread over the whole Surface of the Bottom of the Flower, his Hypotheſis would have carried a further Air of Probability with it; eſpecially after what we have heard from *Malpighi*, concerning the *Velabrum* or *Valve*, which we may ſuppoſe placed there not to keep the Liquor from flow-

ing out; but to hinder that or any thing elſe from without, to enter the *Concha.*

I come now to the learned *Pontedera,* who has explained both what I call the Baſis or Umbilicus of Flowers, and the Liquor found upon the Surfaee of that, at greater length than has been done by any.

What he has told us concerning the firſt of theſe, I ſhall only take notice of as far as may be uſeful, in order to underſtand the ſecond. *Voco Receptaculum,* ſays he, *Corpus quoddam figurâ diſſimile atque varium, cui Stamina & petala ſemper adhærent, & in quam tum apicum tum petalorum ſuccus corrivari ſolet, ut a receptaculo ſenſim embryoni ſubminiſtretur. Cum enim flos citiſſime perficiatur, atque mox contabeſcat, embryo autem non eâ celeritate evolvatur ut omnem apicum petatorumque Succum continere valeat, neceſſarium viſum eſt, ut in parte aliquâ humor ille ſeponeretur, ex qua paulatim ad Embryonem tranſiret. Hac de Cauſa Receptaculum conſtitutum Credimus, ex cujus munere nomen impoſuimus, quoniam ad hoc tempus parum a Botanicis excultum acceperamus, licet eximii uſus, ut nos e multis difficultatibus expedire poſſimus. . . A Malpighio modo Zonam ſeu Circulum Stylum inveſtientem modo dilatatam petioli ſubſtantiam, quæ folia & Stylum profert nominatum invenio.* The Author goes on to explain, by various Examples, two ſorts of theſe *Receptacula,* the one *cui Embryo innaſcitur,* and the other *quod Empryoni imponitur,* but the Words I have quoted are ſufficient for my Deſign, and from them it appears, that what in the *Guernſey* Lilly I have called the *Umbilicus,* this Author would have termed the *Receptaculum;* they agree exactly in Situation, and the *Petala* and *Stamina* ariſe from them both. At preſent, I am no further concerned with the uſe he aſſigns to it, than only that he ſuppoſes it a repoſitory for Juice, conveyed thither from the other Parts of the Flower.

I agree with him, that the *Receptaculum* has been but very little taken notice of by Botanical Writers, by that or any other Name; but I am apt to think he has miſtaken *Malpighi*'s Meaning in the Expreſſions he quotes from him. That by the *Zona* and *Circulus Stylum ambiens,* is not to be underſtood the *Receptaculum,* is plain, becauſe that is taken notice of by *Malpighi,* as being common but to very few Flowers, ſuch as the *Been Albus,* &c. whereas this Author's *Receptaculum* is by him made an eſſential Part of every Flower, *Petalous* as well as *Apetalous* or *Stamineus,* ſince both *Petala* and *Stamina* always ariſe from it; and beſides *Malpighi*'s *Zona* makes a quite different appearance in the Figure he has given us of it, from what any of this Author's *Receptacula* do in his.

Much

Much leſs can this *Receptaculum* be the *Dilatata Petioli ſubſtantia*; for beſides the Reaſons already mentioned, *Malpighi* makes the *Stylus*, as well as *Stamina*, ariſe from that Subſtance, and by his Figure it is plain, he means either what Botaniſts term the *Calix* or Cup of the Flower, as diſtinguiſhed from the *Perianthium*, or elſe the *Vaſculum Seminale*.

Had *Malpighi* ever conſidered this part of the Flower as diſtinct from the reſt, it would moſt probably have been in the *Amygdalus*, the Figure of which this Author has borrowed from him to repreſent one kind of his *Receptacula*; but what he calls by that Name, *Malpighi* terms only *hians Calycis ſubſtantia*.

Thus far concerning the *Receptaculum*. As for the Liquor found upon it *Pontedera* tells us, *Hic ſuccus qui in omnibus fere floribus reperitur, & quo plurima inſecta Victitant apeſque Mellificant, eſt ille liquor qui e receptaculo manat, & circa Embryonem colligitur eumque mollem ſervat & inungit, quo facilius Embryonis partes explicentur atque diſtendantur. Cum autem hic ſuccus dulcis ſaporis ſit, idcirco ab inſectis avidius expetitur; Embryo autem hoc liquore privatus aere & ſolaribus radiis exſiccatur, & ſæpe ſine fructu contabeſcit.* All this our Author illuſtrates by ſeveral Examples, but I need only take notice of what he has obſerved concerning the *Bignonia Americana ſiliquâ breviore Tournef. Inter flores & receptaculum*, ſays he, *Similiter inter receptaculum & Embryonem dulcis colligitur ſuccus, qui ex hiantibus receptaculi utriculis effunditur, receptaculum ſucco refertum apparet & turgidum. Id circo cum neque receptaculum neque fructus puſillus, tantam liquoris copiam, quanta a tanto flore deſcendit, continere valeant, fit in tranſverſales receptaculi utriculos a liquore impetus & foras ſpargitur. Hic ſuccus qui inter Calycem delapſo Petalo & receptaculum reperitur, ab ipſo receptaculo rurſus excipitur, qui vero inter receptaculum & embryonem, ab embryone.*

According to this Author, therefore, this Liquor is of a ſweet Taſte, and what the Bees imploy in making their Honey, as was obſerved long ago by *Cæſalpinus*, but he has taken no notice of its being Tranſparent or Glutinous.

That Part of it, which he ſays lies between the *Receptaculum* and the *Petala*, is probably what *Malpighi* aſſigns to his *Conchæ*, of which its very ſurpriſing *Pontedera* has ſaid nothing in this Place: The other Part of it is the ſame with what that Author ſays is contained, *prope floris Umbilicum* in the *Digitalis*.

Con-

Concerning the Nature and Situation of this Liquor therefore, *Pontedera* has told us nothing new.

What he has ſaid concerning the Origin thereof, or the manner in which it is produced, is at beſt but a meer Conjecture, and that not near ſo probable as what we have ſeen from Dr. *Woodward*: For as *Malpighi*, after all the Pains he took, would never venture to determine, whither any part of the Sap, by which the tender Seed is nouriſhed, was prepared before-hand in the *Petala* and *Stamina* or not; ſo there are other Authors of no ſmall Note, who pretend to prove that there can be no ſuch thing, but that all the Nouriſhment both of the *Embryo* its ſelf, and all the other Parts of Flowers, are carried directly to them from the *Pedunculus*, or if they have none, from the common Stalk from whence they ariſe.

The Uſe aſſigned here for this Liquor, while it remains on any part of the ſurface of the *Receptaculum* is intirely new, and not without probability; and tho' it does not directly contradict that mentioned by Dr. *Blair*, yet it quite takes off the force of Mr. *Fairchild*'s Experiment to prove it; becauſe the wiping of it off from the Flower, may have another very different effect upon the Fruit, than meerly the preventing its being fæcundated by the *Farina*, *viz.* the expoſing of it too much to the action of the Sun and external Air, as this Author obſerves.

The way which he diſpoſes of this Liquor when it has done all its work upon the ſurface of the *Receptaculum*, is, I believe, pretty much without Foundation; for as, without any breach of Charity, we may venture to affirm, that this Author never ſaw any Part of it re-enter either the *Receptaculum* or Seed Veſſel, ſo it is much more likely to ſuppoſe that it evaporates into the Air; ſince that Part of it which he reſtores to the Seed, muſt be but very unfit Nouriſhment for it, after remaining ſo long expoſed; and ſince the *Receptaculum* its ſelf, in my Plants at leaſt, began to decay not long after the *Petala*, it ſeems to have but little occaſion for the other Part.

Since *Pontedera*, I meet with none but Dr. *Chambers* who have any thing that relates to this Subject. This Author concludes the brief Account he has given us of the *Petala* of Flowers, by the following Obſervation. *Sed etiam Conchulæ ſunt, ſen Veſiculæ parvæ valvulis donatæ, ad fundum petalorum, quarum ſingulæ guttulam mellitæ ſeu ſaccarinæ Materiæ continent. Hæ vero in omnibus plantis Petalis donatis adſunt, imo & in amariſſimâ Aloë florente, Liquor tam dulcis fit, quam in gratiſſimâ dulciſſimaque planta.*

Hunc

Hunc vero liquorem apes floribus exugunt, ſecumque in alvearia ſua portant, unde mel conficiunt.

In this Paſſage there are two Things ſaid in more expreſs and poſitive Terms, than in other Authors; *Firſt*, That no petalous Flower is without a *Concha* in each *Petalum*. And *ſecondly*, That the Liquor contained in theſe *Conchæ*, is as ſweet in the bittereſt Plants as in the ſweeteſt.

CULTURA.

I Have already acquainted the Reader, that hitherto I have had no opportunity of examining the Culture of this Plant myſelf; but this defect will be abundantly ſupplied by the following Account, which I procured from the ingenious Mr. *Fairchild*, concerning his method of Managing it. The truth of every Thing contained in his Letter may be ſecurely depended upon; for beſides that, Mr. *Fairchild* has great numbers of theſe Lillies in his Gardens, in full Perfection, as proofs of the Genuineneſs of his method of Culture; he is ſo deſervedly famous for his great Skill in all the parts of Gardening, that to him we are obliged for moſt of the conſiderable Improvements that have been made in that delightful Art for theſe ſeveral Years paſt; they being either intirely owing to himſelf, or he having aſſiſted others in making them. Neither is his Art confined to what may be called the practice of Gardening only. It extends to the moſt refined Parts of the Theory of Vegetation; for it is but a very little while ago, that we had the Pleaſure of having him communicate to the *Royal Society*, ſeveral Experiments equally new and concluſive, concerning the continual motion of the Sap in Plants. His Letter is to this Purpoſe.

SIR,

I Have here ſent you an Account of the proper management of the Guernſay Lillies. *They love a light Earth, made with Dung and Sand, and a little Lime Rubbiſh with it does very well; it keeps the Roots ſound: For if the Earth be too ſtiff or wet, you may keep them many Years before they blow.*

If they are in Pots, they ſhould be put in the Houſe in Winter, to keep them from the ſevere Froſts, which are

apt to rot the Roots, for any Thing that is in a Pot freezes harder than in the natural Ground.

The Time of moving them is when they have no Leaves on the Root, that is from June *to* Auguſt.

Thoſe that come with ſix Leaves this Year, ſeldom fail blowing the next Year.

They need not be put in freſh Earth not above once in two or three Years.

By this method of Management, I have had the ſame Roots blow again in four Year's Time; for as the Flower Stalk comes out of the middle of the Root, ſo when the green Leaves begin to ſhoot, which is always after the Flower; they always come up on one ſide of the Stalk, ſo as they come up, the Stalk becomes of one ſide of the Root, which plainly ſhows that there is a new Heart made in the middle of the Bulb, which is three or four Years before it hath Strength to blow.

For as the Tulip *makes a new Bulb every Year, by the Circulation of the Juices that are in the Leaves and Flower Stalk, ſo by the Circulation of the Juices that are in the Leaves of this Plant, it makes a Bulb fit for blowing the third or fourth Year.*

So I find many Miſcarriages that happen in the Guernſay Lilly, *are by letting the Leaves be killed by the fierceneſs of the Froſt in Winter, or by cutting them off, as ſome People do, when they are green; which will ſo much weaken the Plants, that they may keep them twenty Years and not have them blow.*

So by the above method of Management, where there is a Stock, there will be continually ſome Blowing.

I hope this Account may be acceptable from

Hoxton, October 21. 1724.

Thomas Fairchild.

To

To this Account of Mr. *Fairchild's* I ſhall ſubjoin two others from Monſieur *Liger* and Mr. *Bradley*.

This *Narciſſus*, ſays *Liger*, like all the reſt is multiplied by Bulbs, and is cultivated with more ſucceſs in Pots, than in the naked Earth, becauſe, if it be in Pots, it is eaſy to give it as much Sun, as it requires to produce its Flowers. Theſe Pots ſhould be filled with very light Earth; that is to ſay, two thirds of Mould, taken from a hot Bed, and the other third of Kitchen Garden Earth, well ſifted. Having made this compoſt of Earth, and filled the Pots, we plant there in the bulbs of this *Narciſſus*, two or three Inches deep, nor do we pull them up to take off the Suckers, till the ſecond or third Year after, and always in the Month of *March*; having all along taken care, to keep the Pots in a Place where the Froſt never enters, and that is not damp. We leave theſe Bulbs without watering them, from the Day they are planted, till the Month of *May*, taking care to keep them always in the warmeſt Place we can. When that Month is come we give them a plentiful wetting, by dipping the Pots into Water, and leaving it there, till the Water ſwims on the ſurface of the Earth that fills the Pot: After which we ſet it in the hotteſt Sun we can. After this firſt wetting, we are careful to water them as much as the Heats will permit, this we may not neglect to do, except the Weather be very Rainy. This Plant requires a warm Place, and delights to be where the Sun naturally darts down his fierceſt Rays, for which Reaſon, except we are exact in ordering it according to the Method above preſented, it will ſcarce ever give us a Flower worth the having.

Thus we govern the *Narciſſus* of *Japan* till the Month of *October*, to oblige it to produce many Suckers, and beautiful Flowers in its Seaſon. The following Year we do not, as I have ſaid already, take up the chief Bulb, but only change the Earth, that lies over it, for other of the like Nature, and leave it thus till *May* without watering it. The third Year we pull up the Bulbs to take away the Suckers, that are grown about them.

Thus far Mr. *Liger*. Mr. *Bradley* tells us, that the Soil proper for this Plant, is two third Parts Sea Sand to one of natural Soil, or a light ſandy Earth mixed with an equal quantity of Rubbiſh.

It will bear the Hardſhips of our Winters, if it be planted in either of the foregoing Soils, under a warm Wall, but chiefly if it be kept dry.

The Flower Stems of this Plant are commonly about a Foot high, the Off-ſets will blow in about three or four Years after they are taken from the old Root.

The

The *Guernſay-Lilly*, ſays the ſame Author, has hardly its equal for Beauty among the flowering Race, and yet it is rarely found in our Gardens, which may perhaps be for want of a right knowledge of its Culture. Mr. *Fairchild* of *Hoxton*, has this Plant flowering with him every *Autumn*, even from Off-ſets taken from the great Roots.

After this manner, according to the beſt Judges, is this charming Plant to be cultivated, and whoever will but give themſelves the trouble to walk out to *Hoxton*, in the Months of *September* or *October*, and view it in Mr. *Fairchild*'s Garden, in its full Prime and Beauty, will readily agree, that it richly deſerves to be taken Pains about. This is what we in *England* ought to think our ſelves more particularly obliged to, than all the World beſides: Nature aſſiſted by the peculiar hand of Fortune, has bleſſed us with this Treaſure without our asking for it, and the only ſuitable Return we can make, for ſo great a Happineſs, is in perfecting by Art and Care, what ſhe has ſo bountifully begun.

I therefore heartily invite all lovers of Flowers, to the Culture of the *Guernſay-Lilly*, the great Empreſs of the whole flowery World, I am ſure, the nobleſt Plant that *England* can boaſt of; and I cannot do that better than in the Words of the famous *Rapin*, to which I ſhall annex the two *Engliſh* Tranſlations that have been made of them. For what that Author ſays of *France*, may with a great deal more Juſtice be applied to *England*.

RAPIN.

Voſque boni, vos illum hortis inducite crebrum,
Cultores, rarique novum decus addite Franco.

EVELYN.

Therefore t'augment the Grace of *France* 'tis fit,
This Flower into our Gardens we admit.
'Tis true, it hardly anſwers our Deſires
At firſt, but longer Culture ſtill requires;
Yet, let not this occaſion our Diſpair,
Whence once it blows, 'twill recompenſe our Care.

GARDENER.

This Flower, ye skilful Floriſts, often Plant,
Let not our Nation this fair Beauty want;
And tho' ſhe anſwers not your common Care,
No coſt or labour on her Dreſſing ſpare;
For ſhould ſhe but her conquering Charms diſplay,
From every Fair ſhe bears the Prize away.

EPILOGUS.

I cannot conclude this Deſcription better than by a ſhort recapitulation of it in *Latin*, which I have drawn up, *more Boerhaaviano*, that is, in the Stile and Manner uſed by the learned Profeſſor *Boerhaave*, in his *Index Plantarum*, &c. *viz.*

RADIX

Bulboſa, tunicata, ſeu ex multis candidis conflata pelliculis, ſibi mutuo incumbentibus, & filamentorum tranſverſalium interventu connexis.

Ventre rotundiore in Collum longiuſculum attenuato.

Numeroſis albiſque fibris comata, a baſi oriundis, & in fibrillas tenuiores laxatis.

Membranaceo involucro obducta & infuſcata.

Perennis & vivax, ſingulis Annis Novas ſoboles emittens.

CAULIS FLORIGER

Nudus, enodis ac lævis,

Ex rotundo preſſior,

Duos circiter palmos altus.

Partim propriis, partim ſibi cum foliis communibus tunicis involutus, rectus aſſurgit; poſtea vero, ſuperbo florum ponderi cedere coactus, paulatim incurvatur.

Colore viridi nitens, inferiore autem ſede ex viridi rubeſcens.

Fungoſâ ſubſtantiâ quaſi medullâ, oppletus,

Et Cortice duro ac forti munitus.

PERIANTHIUM

E Caulis ſummo utrinque productum,
Duabus membranis conflatum.
Colore Cinnabarino diluto.
Tandem bifariam dehiſcens, tenellos formoſiſſimoſque florum partus excludit.

PEDUNCULI

Trigoni.
Subvirides.
Unum florem ſinguli in faſtigio gerentes.
In orbem ſive umbellam diſpoſiti,
Et in latius continuo radiati.

POLYANTHOS,

Seu floribus pluribus in coronam umbellatam ſpecioſiſſimam congeſtis,
Liliaceis,
Hexapetalis,
Deorſùm, ad Lilii Montani modum, quod Martagon vocant, paululùm reflexis,
Bimeſtri fere vitâ.

PETALA FLORUM

Inodora.
Rubro verſicolore eleganter variegata,
Miciſque aureis ad ſolem pulcherrimè ſplendentia.
Oris mucronem verſus, leviter undulatis;
Mediâ, intus, regione, ſulco quaſi perfoſſâ,
Extrà, coſtulâ prominente ſuffultâ;
Imâ parte in unguem brevem & Albicantem deſinente.
A Floris Umbilico, ſive baſi ſpongioſa, candida, melleumque exſudante liquorem, unà cum ſtaminibus, emergentia.

STA-

STAMINA,

Sive Vaſa ſeminalia maſculina, ſena, ſibi invicem contigua, & Stylum circumamplexa.
Cylindrica, ſuperiore autem parte in Conum vergentia.
Colore pallidius rubente.
Apicibus totidem,
Verſatilibus,
Atropurpureis,
Bivalvibus,
Farina fœcundante Onuſtis, inſtructa.

STYLUS

Principio triſido ab Ovarii Loculis emergens.
Staminibus productior.
Concolor.
In Cuſpidem triangularem, pilis ſeu villis obſitum, abiens.

VASCULUM SEMINALE

Tricapſulare, ſeu in tria loculamenta diviſum.
Polyſpermum, multis minutiſſimis, ſubrotundis, albiſque ſeminum rudimentis fœtum,
Quæ floribus elapſis, in plagis hiſce Borealibus, cum Caule emarceſcunt.

FOLIA

Narciſſinorum æmula.
Viridia & glabra, in Apice retuſa.
Externe convexa, interius concava.
Palmari longitudine, latitudine unciali.
E radicis fundo, ſeu baſi conum obtuſum referente, a latere Caulis, ſerius autem erumpentia.
Pleraque erecta, nonnulla humi procumbentia.

ADDENDA.

SInce the printing off of the foregoing Sheets, I have met with two other Books in which the *Guernſay Lilly* is mentioned, and both of them in *Engliſh*.

The firſt is called *Kalendarium Hortenſe:* Or, the *Gardiner's Almanack*. By *John Evelyn*, Eſq; *F. R. S.* and contains ſome Obſervations concerning the Culture of this Plant. Of this Book there have been at leaſt nine Editions; the firſt, *London* 1664. in Folio, and the Ninth in 1699. in Twelves. Theſe two Editions, together with the Third, in 1669. Folio, I have ſeen; and all of them differ in ſome Particulars, from one an other.

In the Firſt, *p.* 65. talking of the Gardiner's Work, during the Month of *April*, he ſays, Now take out your *Indian Tuberoſes*, parting the Off-ſets (but with Care, leaſt you break their Fangs) then pot them in Natural, not forced Earth; a Layer of rich Mould beneath and above this natural Earth to nouriſh the Fibres, but not ſo as to touch the Bulbs: Then plunge your Pots in a hot Bed temperately warm, and give them no Water 'till they ſpring, and then ſet them under a South Wall: In dry Weather, water them freely, and expect an incomparable Flower in *Auguſt*. Thus likewiſe treat the *Narciſſus of Japan*, or *Garnſay Lilly* for a later Flower, and make much of this precious Direction.

In the Month of *June*, plant your *Narciſſus of Japan* (that rare Flower) in Pots, *&c.*

In *September*, the Flowers of the *Garnſey Lilly*, or *Narciſſus of Japan*, are in their Prime.

And in a Catalogue of Plants, which according to their different Nature, require more or leſs Indulgence, he ranks the *Narciſſus of Japan* among ſuch as endure the ſecond degree of Cold, and which are accordingly to be ſecured in the Conſervatory.

In the third Edition, *p.* 15. to the Directions for *April*, he adds, that this nice Curioſity (the *Garnſay Lilly*) ſet only in a warm Corner, expoſed to the South, without any removal at all for many Years, has ſometimes proſpered better.

In *June*, inſtead of Planting, he orders the *Narciſſus of Japan* to be watered in Pots.

In

In the ninth Edition, *p.* 52. he tells us, that Sea Sand, mingled with the Mould more plentifully towards the Surface, exceedingly contributes to the flouriſhing of this rare Exotick. All the reſt is as in the Third.

What deſerves chiefly to be remarked about all that we have quoted from this Author, is that he is the firſt who has given any Directions about the Culture of this Plant in *Engliſh*, or called it by the Name of the *Garnſay Lilly*; for which, not having then ſeen his Book, I have in the Introduction and Names, by miſtake, cited *John Rea.*

The other Book is the *Lady's Recreation, or the Pleaſure and Profit of Gardening improved. By* Charles Evelyn, *Eſq*; Lond. 1707. 8*vo.*

The *Guernſay Lilly*, is by this Author, called the *Lilly of Japan:* And he tells us, *p.* 120. that this is a rare and curious Exotick, yielding a fair branch of Flowers, not unlike the *Martagons.* And the Sun has ſo great an Influence over theſe Flowers, that when it ſhines on them, the whole Flower ſeems changed, and reſembles Cloth of Gold: But the Root never produces any more Flowers after once blowing. He has annexed likewiſe a *Kalendarium Hortenſe* of the ſame Nature, and I believe, pretty much in the ſame Words with that already mentioned; but without giving any particular Directions about his *Lilly of Japan.*

What he here ſays, that the Root never produces any more Flowers after once blowing, is falſe. Mr. *Fairchild* in his large Stock of Roots, has Inſtances every Year of the contrary.

E R R A T A.

In the Catalogue of Authors.

For *Parienſis* read *Pariſienſis*

In the Introduction.

Page 4. *ſome Letters* r. *a Letter*
Ib. *This Aldinus* r. *This, Aldinus*

In the Deſcription.

Page 4. *Sen* r. *Seu*
P. 6. *Dramch* r. *Drachm*
P. 7. *ſubſtance. of* r. *ſubſtance, of*
Ib. *ragged, they* r. *ragged. They*
Ib. *than the* r. *than in the*
P. 8. *it as* r. *as it*
P. 9. *ſoft the* r. *ſoft to the*
Ib. *there other* r. *there are other*
P. 12. *ariſing* r. *ariſe*
Ib. *congerics* r. *congeries*
P. 19. *three Inches and one eighth Part* r. *three eighth Parts of an Inch*
P. 21. *Semiconere to* r. *Semiconcreto*
Ib. *forvea* r. *fovea*
Ib. *Calix* r. *Umbilicus*
P. 23. *Baſin* r. *Baſon*

Diſſection of the Coffee Berry.

P. 5. *greateſt of* r. *greateſt part of*
P. 6. *Camboidge* r. *Cambridge*
P. 19. *time they* r. *time as they*

In the Title mentioned after the Advertiſement.

For *Muſcles.* r. *Muſcles,*

A

Botanical Diſſection

OF THE

COFFEE BERRY.

Read and demonſtrated on ſeveral Preparations,
at a Meeting of the

ROYAL SOCIETY,

March 18. 1724-5.

PREFACE.

THE earlieſt *Accounts that* European *Travellers have given us, of the uſe of the Coffee-drink in the* Turkiſh *Dominions, contain likewiſe ſome more, ſome leſs exact Accounts of the Fruit with which that Liquor is prepared. And ever ſince it has been commonly known in* Europe, *eſpecially in* England *and* France, *Botanical Writers have endeavour'd to add new Obſervations about it, to thoſe which are to be found in the Books of Travellers.*

Of theſe in general, we may diſtinguiſh two Kinds; ſuch as were made before the Coffee Tree its ſelf, by the Care and Induſtry of the Dutch, *found its way to the* Amſterdam *Gardens, and from thence, as from a common Nurſery, to many other Places in* Europe; *and ſuch as have been made ſince that Time.*

Theſe laſt, as we may eaſily conceive, are the moſt Exact, as well as the moſt Compleat; but after all that has been ſaid, the Subject is very far from being exhauſted. There is ſtill room left for further Inquiries. And as I have lately thought it worth while to carry theſe as far as I am capable of, or have hitherto had an opportunity of doing; I am now to lay before this honourable Society, the reſult of the Pains I have been at, in the following Method.

I ſhall begin by a Liſt of the Synonyma, *or different Names that have been given to the Coffee Fruit. Theſe I*

have taken care to diſtinguiſh from ſuch as are peculiar either to the Tree or Liquor; a Thing ſeldom or never attended to by Botanical Writers.

I ſhall in the next Place, ſet down ſuch Obſervations, as I think, do belong to the Coffee Fruit in General.

Under the third Head, I ſhall deſcribe the Involucra *or Coverings of it.*

Under the Fourth, the Nucleus *or Kernel.*

And laſt of all, the PLANTA SEMINALIS, *or true Seed, as far as it is diſcoverable by the naked Eye.*

To my own Obſervations concerning each of theſe Particulars, I have taken the Liberty to ſubjoyn ſome ſhort Hiſtorical Remarks upon all that has been hitherto ſaid about them, both by Travellers and Botaniſts, whom I have conſulted. A Catalogue of their Names, together with the Years in which their Books were publiſhed, the Reader will find annexed to this Introduction.

The Coffee Tree being now Cultivated, not only in the Phyſick Garden at Amſterdam, *at* Paris, *and in many other Places in* Europe, *as I have already obſerved; but alſo by ſome curious Gentlemen in our own Country, with good Succeſs; I am preparing an exact Deſcription thereof, together with the Hiſtory of the uſe of Coffee both in* Aſia *and* Europe, *and the different Methods of preparing that Liquor; ever ſince the firſt diſcovery of it to the preſent Time.*

This Deſign I intend to proſecute in the ſame Method which I have here followed in deſcribing the dried Fruit, and this, I deſire, may be looked upon as a Specimen of the whole, which ſhall ſpeedily follow, whenever I have been able to compleat the neceſſary Obſervations I am actually imployed in making, upon the growing Plant.

I have

I have this farther to acquaint the Reader with, that as nothing has hitherto appear'd in Engliſh, *concerning the Culture of the Coffee Tree, and method of managing the ripe Fruit in the Kingdom of* Yemen *in* Arabia Felix *(its original and native Place of growth) except ſome ſhort Obſervations communicated by our moſt learned and worthy Preſident, Sir* Hans Sloane; *I think it will not be an improper Appendix to my Deſcription of the Coffee Fruit, if I ſubjoin to theſe, a late Account, publiſh'd in* French *by Monſieur* La Roque, *from Memoires furniſhed him by Perſons who travelled over a great part of that Country.*

And as the Fraud or Management imputed to the Arabians *of ſpoiling the Germinative Faculty of the Coffee Fruit, before they ſuffer it to be Exported, is ſuppoſed to be put in practice while they are drying and preparing it: The Hiſtory of this naturally led me to examine the grounds of that Accuſation, and the Sentiments of Botanical Writers about it.*

NOMI-

NOMINA AUCTORUM.

Carolus Cluſius.	1574	*Joh. Jacobus Berlu.*	1693
Leonhartus Rauwolfius.	1583	*Johannes Pechey.*	1694
Proſper Alpinus.	1592	*Petrus Pomet.*	1694
Johannes Gerardus.	1597	*Hans Sloane.*	1694
Johannes Cotovicus.	1598	— *Galand.*	1696
Caſparus Bauhinus.	1623	*Jacobus Vanierus.*	1696
Thomas Johnſon.	1636	*Nicolaus Lemery.*	1698
Johannes Veſlingius.	1638	*Johannes Houghton.*	1699
Johannes Parkinſon.	1640	— *Du Mont.*	1699
Johannes Bauhinus.	1650	*Ludovicus Lemery.*	1702
Gualtherus Rumſey.	1657	*Jo. Chriſtianus Langius.*	1704
Petrus de la Valle.	1670	*Paulus Hermannus.*	1710
Anonymus Gallus.	1671	*Jo. Baptiſta Chomel.*	1712
Fauſtus Nairon Baneſius.	1671	*Nicolaus Andry.*	1713
Henricus Mundy.	1680	*Jo. Chriſtophorus Volkamerus.*	1714
Nehemias Grew	1682	—— *De Juſſieu.*	1715
—*Bernier.*	1683	—— *La Roque.*	1716
Phil. Sylveſter du Four.	1683	*Mich. Bern. Valentini.*	1716
Nicolaus Blegny.	1687	*Joſ. Pitton Tournefort.*	1717
Tancredus Robinſon.	1687	*Johannes Quincy.*	1718
Johannes Ray.	1688	*Adamus Olearius.*	1719
Claudius Salmaſius.	1689	*Richardus Bradley.*	1721
		Joſephus Miller.	1722

A

BOTANICAL DISSECTION

OF THE

COFFEE BERRY.

NOMINA.

Bunnu
Buncho Avic. } Rauwolf.
Buncha Rhaz.

Bon vel Ban. Alpin.

Buna
Elcane } Cluſ.
Bunca Rhaz. ex Rauwolf.

Cahu } Cotovic.
Bunchi.

Bunchos *Bunnum Rauwolf.* *Granum quo Turcæ ſomnum fugant, Plater.*	J. B.
Cahué.	La Valle.
Coffee *Cophie* *Cophy.*	Rumſey.
Coffé.	Anon. Gall.
Ben. & Bun.	Baneſ.
Elcave.	Salmaſ.
Coffee Berry.	Grew.
Coffa.	Mundy.
Café.	Bernier.
Cahoüch Arab. *Cahueh Turcar.*	Du Four.
Baccæ Coffee *Coko Seeds.*	Berlu.
Coffee, in Latin Coava.	Pechey.
Bonca Bonco *Elkarie.*	Pomet.
Semen Coffee.	Herman.

Buun.	Galand.
Terris ſaba miſſa Pelaſgis.	Vanier.
Coffi.	N. Lemer.
Caffé Behnen.	Lang.
Caboven.	Volkam.
Coſea.	Quincy.

Of the COFFEE FRUIT *in general.*

THE Tree which produceth this Fruit, has gone by as many Names as the Fruit its ſelf. The conſideration of the Flower was what principally led the learned *Commelinus* to call it a Jeſſemin, and in this he has been generally followed by ſucceeding Writers. It does not belong to my preſent Deſign, to determine how far they have been in the right in ſo doing, and the Queſtion its ſelf is of too ſmall Moment, to deſerve a Digreſſion. The following Appellation, by which I have choſen to diſtinguiſh the Coffee Tree, I look upon to be as proper to it, as any that can be given it.

Arbor Arabica Yemenſis,
perpetuâ fronde Virens.
Folio Lauri Vulgaris haud abſimili.
Flore Jaſmini Hiſpanici,
Monopetalo, in quinque ſegmenta diviſo,
Albo,
Odoratiſſimo.
Vaſculo ſeminali, ut plurimum, bicapſulari, nonnunquam tricapſulari, in fructum Nuciformem Abeunte. Ex cujus Nucleis, potus ille Saluberrimus, Coffee vulgo dictus, paratur.

In this ſhort Deſcription, I have expreſſed the Original *Locus Natalis*, or native Soil of the Coffee Tree, *viz.* the Kingdom of *Yemen* in *Arabia Felix*; That it is of the number of the Ever-greens; its Leaves like thoſe of the Common Bay; its Flower reſembling that of the *Spaniſh Jaſmin*; the ſtructure of the Seed Veſſel; and the uſe that is made of the Fruit.

As

As for the freſh Fruit of the Coffee Tree, I muſt refer intirely to what *Meſſrs. De Juſſieu, Volkamerus, La Roque, Bradley*, and others have ſaid about it. I have not as yet been ſo lucky as to be able to examine it with due Care my ſelf; and therefore can have nothing material to add about its appearance in that State.

Neither is the dried Fruit to be often met with intire here in *London:* A great many ſuch, however, I have been at Pains to pick out of Bales of Raw Coffee at the Drugſters; and ſome of them I found to contain two perfect Kernels in one common Husk, others only one; I ſay perfect Kernels, becauſe even in thoſe that are ſingle, there are moſt commonly, if not always, ſome remains of the abortive Kernel, lying like a *Clipeus* or Target upon the other, as ſhall be explained more particularly in its proper Place.

The Number of intire ſingle Berries in each Bale, does always far exceed the double ones: At a medium of all the Trials I made, the Proportion of them was nearly as ſeven to one.

The Reaſon why we have any intire Berries at all Imported, can be no other, than their being ſmaller than the reſt, and ſo eſcaping the Roller which the *Arabians* make uſe of to take off the Husks, in the Manner we ſhall ſee preſently; and as there are fewer double Berries of that ſmall Size than ſingle ones, a greater Number of theſe laſt muſt remain (after this Preparation) with the Husks on.

The ſingle and double Berries differ from one an other in Figure; neither are all of each Kind exactly alike: The firſt are moſtly of an oblong oval Figure, except where the Prominence, formed by the abortive Kernel makes a ſmall Variation; the others, eſpecially the ſmaller ſort, are more nearly round, with a ſenſible depreſſure on both Sides, running from the Foot-ſtalk to the *Umbilicus*; and by this it may be eaſily known, whether a Berry be ſingle or double, without taking off the Husk.

The ſingle Berries which I collected, may with reſpect to their Sizes, all be diſtinguiſhed into three Sorts, and the Length, tranſverſe Circumference, and Weight of each Sort at a Medium, are as follows.

Largeſt Sort.

Lenth, half an Inch.
Circumference, one Inch.
Weight, five Grains.

Second Sort.

Lenth ſeven ſixteenths of an Inch.
Cir. thirteen ſixteenths of an Inch.
Weight, three Grains and an half.

Leaſt Sort.

Length, a quarter of an Inch.
Circum. five eighths of an Inch.
Weight, one Grain.

The

The double Berries I diſtinguiſhed into two Sorts only, and the Dimenſions and Weight were theſe.

Largeſt Sort.	*Leaſt Sort.*
Length, three eighths of an Inch.	Length, one quarter of an Inch.
Circumf. one Inch and one eighth.	Cir. eleven ſixteenths of an Inch.
Weight, four Grains.	Weight, ſeven eighths of a Grain.

By this it appears that the double Berries that are imported intire, may as eaſily miſs the Roller as the ſingle ones.

The firſt Author, by whom I find the Coffee Fruit ſo much as mentioned, is *Rauwolfius*, who was in the *Levant* in the Year 1573. and what he has ſaid, with relation to our preſent Subject, is only, that both in Bigneſs and Shape, the Coffee Fruit is like the Bay Berry. This Compariſon has been often uſed, and with reſpect to the intire Berries, ſuch as they are found commonly in the *Levant*, is, I believe, pretty juſt; but the far greateſt of thoſe that are imported hither, are conſiderably ſmaller.

Next to *Rauwolfius* is *Proſper Alpinus*, who was in *Egypt* in 1580. he has ſaid but very little concerning the deſcription of the Fruit; neither is it certain whither he means the intire Fruit, or only the Kernel.

The firſt Coffee Fruit that ever I hear to have been in *Europe*, was ſent to *Cluſius* by *Alphonſus Pancius*, an *Italian* Phyſician; and *Cluſius* has obſerv'd about it, that it is a ſmall Fruit, ſomething bigger, and more oblong than that of the *Fagara*, with a kind of *Sulcus* running lengthwiſe on both ſides of it.

This Author had another preſent of theſe Seeds in 1596. from *Honorius Bellus*, who was at that time in the Iſland of *Crete*.

Gerrard has done nothing but copy *Cluſius*'s Figures, which he has placed by miſtake, amongſt the *Indian* Fruits. *Johnſon*, in his Edition of *Gerrard*, has added *Cluſius*'s Text to his Figures.

Before the Year 1613. the Coffee Fruit was in the Hands of moſt of the curious Botaniſts in *Europe*, for *J. B.* who died in that Year, mentions his Friends having ſent him ſome of them from all Quarters; and the Account he has given us of the Fruit in general is, that it is hardly bigger than the Seeds of *Ricinus*, of the ſhape of an Olive, with a *Sulcus* or *Lacuna* ſometimes on one Side and ſometimes on both. By this laſt, however, we are only to underſtand that the Depreſſure is not always alike perceivable on both ſides of the Fruit.

Petrus de la Valle, who was at *Conſtantinople* in 1615, has obſerved nothing that belongs to this Head, ſave only that the Grains of which Coffee is made, are of an oval Figure, and about the bigneſs of a ſmall Olive.

Olearius, Secretary to the *Holſtein* Embaſſy, ſent into *Perſia* in the Year 1633. compares the ſize of the Coffee Fruit to that of a ſmall Bean.

According to *Parkinſon*, the Coffee Fruit is ſomewhat bigger than a Hazel Nut, and longer; round alſo and pointed at one End, furrowed alſo on both Sides, yet on one Side more conſpicuouſly than the other. Theſe Words ſhow plainly enough, that *Parkinſon* had ſeen the Coffee Fruit, but withal that he had been at very little Pains to examine it.

Baneſius, the firſt Author who ever publiſhed a Treatiſe expreſſely on Coffee, tells us, that the intire Fruit is ſomewhat like the Cacao, but cleft along the Middle like a Date-ſtone.

The Compariſons by which the three laſt mentioned Authors have endeavoured to explain the Size or Figure of the Coffee Fruit, are, all of them, very ill choſen.

What Dr. *Tancr. Robinſon*, in his Letter to Mr. *Ray*, has told us that the intire Fruit is round on one Side and flat on the other, is what I never could obſerve in any that I have looked upon.

There is nothing but Repetitions to be found in any other Author before the Year 1694. in which Sir *Hans Sloane*, amongſt a great many other Obſervations, equally Curious and New, concerning all parts of the Coffee Tree, the Flower alone excepted, communicated by him to the Royal Society, has added to all that had been ſaid before him, that the Fruit comes out *ex Alis foliorum*, hanging or ſticking to the Twigs by Inch long Strings or Foot ſtalks, and ſometimes one, two, or more at the ſame Place. All this has been ſince confirmed by Mon. *De Juſſieu*, *La Roque*, &c.

Both *Lemerys* tell us, that this is a ſmall longiſh Fruit, round like a *Pignon* (which I ſuppoſe to be the Seed of the *Ricinus Americanus*.)

I cannot conceive how the Coffee Plant eſcaped Monſieur *Tournefort* in all the Works publiſhed in his Life-time, even after he was returned from the *Levant*; and its being mentioned and deſcribed in that Treatiſe, concerning the *Materia Medica*, publiſhed as a poſthumous Work of his, may perhaps be one good Argument to prove it is not Genuine.

It appears by Monſieur *Tournefort*'s Travels, that he was no Enemy to Coffee, but drank it frequently, otherwiſe it might have been thought, that he left it out of all his Books, for the ſame reaſon that the Author of a *Latin* Dictionary, printed at *Camboidge*, is ſaid to have omitted all the Words by which Monarchy is expreſſed, namely, becauſe he hated the Thing its ſelf.

Monſieur *De Juſſieu*, in his excellent Hiſtory of the Coffee Tree, read in the *French* Royal Academy in 1715. but publiſhed in the Memoires of 1713. informs us, from his own Obſervations on a Coffee Tree, in the Royal Garden at *Paris*, That the *Embryo*, or young Fruit, grows nearly to the bigneſs of a Heart Cherry, and is pretty much of the ſame Figure with it; but that when it is perfectly ripe and dry, it is reduc'd to the ſize of a Laurel Berry.

We are obliged to Monſieur *La Roque* for another very accurate account of the Coffee Tree. The Materials of it he received from the Officers of ſome *French* Ships, who travelled over a great part of the Kingdom of *Yemen* in *Arabia Felix*, and Monſieur *De Juſſieu* had likewiſe ſome Informations from the ſame Perſons, from which he compoſed a Memoire, read in the Royal Academy in 1713, but having had an opportunity of examining the Coffee Tree himſelf, before the Hiſtory of that Year was publiſhed, he drew up another Deſcription of it already mentioned, which was inſerted in the Room of the Firſt.

But to return to Monſieur *La Roque*, he acquaints us that to every Flower ſucceeds a ſmall Fruit, but which by degrees grows to the Size of a large Cherry, in which State it is very good to eat. It adheres to the Tree by a ſmall ſhort Foot Stalk, and when perfectly ripe, is not much bigger than a Laurel Berry. The Fruit comes out between the Leaves and Branches, *i. e.* as we have heard from Sir *Hans Sloan*, *ex Alis foliorum*.

Mr. *Bradley*, it ſeems, had neither ſeen *De Juſſieu*'s nor *La Roque*'s Memoires, tho' publiſhed ſix Years before he undertook to write upon Coffee, neither has he examined the Coffee Fruit in the *Amſterdam* Garden, with all the Care that could have been wiſhed; of this, we ſhall give ſome Inſtances as we go along: As to our preſent Subject, he has only remark'd, that when the Fruit is ripe, it reſembles the Berries of the *Lauro-Ceraſus*, or Bay Cherry, being much of the ſame Shape.

To Mr. *Bradley*, we may join Mr. *Joſeph Miller*, who has been as negligent in conſulting the Authors upon this Subject, as the other in obſerving the Fruit itſelf upon the Tree; for about the Fruit in general, he contents himſelf with telling us, that in the Coffee Shruby Tree, the Flowers are ſucceeded by Berries.

Theſe are the Obſervations that have been made by Authors concerning the Coffee Fruit, in the View in which I have here conſidered it. I have only one Remark more to make about them, and that is, that generally ſpeaking, they allow

allow two Kernels to each Fruit without Exception. There is indeed ſome Reaſon to imagine, that *I. B.* has deſcribed a ſingle Berry only, as we ſhall ſee preſently; Dr. *Robinſon* ſays expreſsly that there are generally, in every Shell or Husk, two Kernels, and ſometimes only one; and the Author of *Tournefort's* Poſthumous Treatiſe, that there is generally but one Kernel, and ſometimes two. The firſt is true with Reſpect to all the Coffee Fruit; the other with Reſpect to thoſe that come to us intire.

The Coverings of the COFFEE FRUIT.

IN an intire Coffee Fruit we may conſider the *Involucra* or Coverings, and *Nuclei* or Kernels, which are wrapt up and incloſed by them.

The number of the *Involucra* is always Three; one common to both Kernels, and two proper to each of them.

The common or outermoſt Covering is, as we ſhall hear preſently from thoſe who have examined the freſh Fruit, only the green or reddiſh, ſoft pulpy Subſtance or *Pericarpium*, hardened and dried up, as the Fruit ripens. In this the Seed was formed, and it was then truly and properly the Seed Veſſel or *Uterus*, as *Malpighi* loves to talk.

In ſome Berries it is very much ſhrivel'd, wrinkly, uneven, and as it were furrowed; of a blackiſh or dark brown Colour. In others, eſpecially the double Berries, it is ſmoother, and of a lighter ſhining Brown, but of different Degrees.

The upper extremity of this Covering, or that which is oppoſite to the Foot Stalk (ſome part of which I have often found ſticking to it) terminates in an *Umbilicus*, as it is called by *De Juſſieu*, which looks as if a ſmall circular Impreſſion had been made upon it, with a pretty deep Hole in the Centre thereof.

Upon boiling or long ſteeping in Water, this Coat becomes ſo ſoft, that it may eaſily be ſcrap'd off, but if macerated only a little while, it grows thick, and may be taken off quite, if cut into two equal Parts: And by ſo doing, I have obſerved that in many Berries it is conſiderably thicker near the *Umbilicus* than in any other Part.

I have already obſerved that this Coat is formed of the Seed Veſſel of the Flower, and I can certainly affirm, that that is always Multicapſular, being divided generally into two Cells or *Loculamenta*, as Botaniſts expreſs it, and ſometimes, (as far as I can judge, by

by the figure of ſome Kernels, and one freſh Berry which I have ſeen) into Three.

Neither *Malpighi* nor Dr. *Grew* have explained diſtinctly enough the Nature and Formation of the *Septa* or Partitions of the Seed Veſſels of Plants, and none of thoſe who have had opportunities of examining the freſh Coffee Fruit, in all its different States, have ſo much as mentioned any *Septum* belonging to it.

It is however very apparent, even in dry Berries, and then it ſeems to be a thin fine Membrane, of a different Subſtance from the outer Coat, and dividing the Cavity of it into equal Parts, in each of which is lodg'd one Kernel, involved in its two proper Coverings. Through the middle of it, lengthwiſe, runs a Bunch, or *faſciculus* of ligneous Fibres, continued probably from the Foot Stalk, and ſerving to convey ſome part of the Nouriſhment to the tender *Fætus*.

In examining the outer Coverings of ſome Berries, I have been often inclined to believe, that the whole Cavity of them was lin'd with an inner Membrane, really diſtinct from the pulpy part of the Coat; and perhaps, this *Septum* may be only an Elongation or Production thereof, continued on both ſides to the *faſciculus* of Fibres already mentioned: But, which ever way it is formed, as it adheres inſeperably to theſe Fibres, it has all the properties of a true Partition, and therefore the Seed Veſſel its ſelf, is unqueſtionably Multicapſular.

In thoſe I have, for diſtinctions ſake, called ſingle Berries, this *Septum* is ſtill to be ſeen, between the abortive Kernel and the other; but then it no longer occupies the middle of the Cavity, but is thruſt out of its Place, and by that means very much impaired.

The ſecond Covering or firſt of the proper Coats, may be truly reckoned a *Cortex* or Shell, being very ſtrong and hard, but withal very brittle. I am ſurprized, that they who contend that the Coffee Fruit is of the Nut-kind, as diſtinguiſhed from a Berry, have not made uſe of this Coat to prove it. The Difficulty its ſelf is a mere trifling about Words, the ſignification of the words Nut and Berry, and the diſtinction of theſe two kinds of Fruits being, as far as I can find, hitherto unſettled amongſt Botaniſts.

This being a proper Coat, it muſt either be continued over the *Sulcus* or *Rima* in each Kernel, or terminate at both Sides ſomewhere on the Edges of it: which of theſe is true in fact, I cannot with any certainty determine; I am apt to imagine the laſt, and that

that therefore by means of this *Sulcus*, the Fibres in the *Septum*, always placed oppoſite to it, may have ſome Communication with the Kernel its ſelf, or at leaſt with the inner Covering of it.

The Colour of this ſecond or Cortical Coat, is moſtly that of a Lemon, only a little more inclined to red, and the figure of it is always the ſame with the Kernel it incloſes.

The third or innermoſt Covering, which, becauſe of its Colour, may be called the Silver Coat, is made up of a very fine thin Membrane, ſurrounding not only the out-ſide of the Kernel, but alſo the Proceſs, which lies in the Cavity of it, as ſhall be preſently ſhown. The two ſides of it enter the *Sulcus* of the Kernel, and there joyning form a double *Lamina*, which is from thence continued quite over the Proceſs, and to that, as well as to the reſt of the Kernel, this Coat adheres very cloſe.

I have never been able to diſtinguiſh either of theſe Coats in an abortive Kernel.

Rauwolfius acquaints us that the Coffee Fruit (*i. e.* the common Covering of it) is in Colour almoſt like unto a Bay Berry, and that the Fruit its ſelf is ſurrounded with two thin Shells, which contain two Grains in two diſtinct Cells.

The two Shells here mentioned, are no doubt the common, and firſt of the proper Coats, which are all that have been taken notice of by any Writer ſince his Time. What he has ſaid about the two Cells, is very indiſtinct, and yet it is more than has been ſaid by any body beſides.

Cluſius has taken notice of the outer Coat only; he calls it a thin *Cortex*, of a dark Aſh Colour.

J. B. has deſcribed the other likewiſe. The Fruit called *Buna*, ſays he, conſiſts of two Shells whereof the outermoſt is thick and black; the other thin, and red on that ſide which lies next the Kernel; on the upper ſide of an Aſh Colour.

Veſlingius informs us of the Difference he had obſerved in *Egypt*, between the Taſte of the Coverings, and that of the Kernel. The firſt, he ſays, is in ſome degree acid, the other very ſenſibly bitter. The firſt of theſe Taſtes we need not be very ſollicitous about, for in however great requeſt the Shells may be in *Arabia Felix* and *Egypt*, on account of the Liquor there made of them, called, by way of Excellency, *Caſe a la Sultane*; yet, but a ſmall quantity of them ever comes to *Europe*, and before they get hither they have pretty much loſt their Taſte, and every other ſenſible Quality that is worth minding about them.

Parkinſon tells us the outer Coat is a thin Shell of a darkiſh Aſh Colour, and the other he calls a yellowiſh Skin.

Baneſius has included all the Coverings he knew, under the name of a Shell or Husk.

Dr. *Grew* has ſaid nothing about the Coverings of the Coffee Fruit in particular, but ſince, as we ſhall find preſently, he had examined it very particularly, and has often declared, that in the far greateſt part of Seeds there were three Coverings; it is reaſonable to ſuppoſe that all thoſe which I have deſcribed were known to him.

Dr. *Robinſon*, in order to prove that the Coffee Fruit is of the Nut kind, informs us, that the intire Fruit is covered with two Skins: The exteriour Skin or rather Shell (being as thick almoſt as that of a *Piſtachio*) is of a dark Colour; the ſecond, or interiour Membrane, that covers the Kernels, is much finer and of a yellowiſh white Colour.

Under this ſecond Skin lye generally two Kernels, ſometimes one.

I ſhall be very far from denying, but that the greateſt part of this Deſcription was the reſult of the Author's own Obſervations, tho' at the ſame time it is certain, that every particular in it had been taken notice of long before the Date of his Letter, by Authors, whom perhaps, he did not give himſelf the trouble to conſult; and even the principal Propoſition which all his Letter is deſign'd to prove, *viz.* that the Coffee Fruit is of the Nut-kind, is a Concluſion, that, according to the common uſe of Language, might eaſily have been drawn from Premiſſes as old as *J. B.* and *Parkinſon*; for it was very natural to infer, that a Fruit which conſiſts only of a *Nucleus* or Kernel, and Shell, as theſe Authors have expreſſed themſelves, was rather of the Nut kind than any other.

What part of this Nut ought to be reckoned the Kernel, is not hard to determine: As for the Shell, I have already taken notice, that the firſt of the proper Coats ſeems beſt to anſwer that; our Author has choſen the common or outer Coat, and he is in the right to ſay, it is almoſt as thick as that of the *Piſtachoe*; but then, if I am not miſtaken, it is not by virtue of that outer Coat, that the *Piſtachoe* is called a Nut, but on account of a hard Shell that lies under it, to which the outer Coat of the Coffee Fruit has no reſemblance, neither in Subſtance nor Situation.

By what this Author ſays further, that under the ſecond thin Skin, lye generally two Kernels, it would ſeem that he looked upon it, not as a proper, but a common Coat, as much as the other; but how this can be, I do not ſo well underſtand, ſince not only each Kernel in particular is quite ſurrounded by this Coat; but being thus involved, is intirely ſeperated from the other, by means of the *Septum*.

It appears by the Date of Dr. *Robinſon*'s Letter, that it was written to Mr. *Ray* the Year before the ſecond Volume of his *Hiſtory of Plants* appeared, and therefore it may ſeem ſtrange, that after all the Pains this Author had been at, he ſhould not have been able to perſwade his Correſpondent to rank his Coffee *Frutex*, not amongſt the *Bacciferous* Plants, as he has done, but amongſt the *Nuciferous*. But the Difference propably lay only in the uſe of a Word, Mr. *Ray's Arbores Nuciferæ fructu per Maturitatem Sicco*, differing only from the *Bacciferæ* of that kind, in ſize, as he himſelf informs us.

Both *Lemerys* tell us, that the *Cortex* of the Coffee Fruit is a pretty hard ligneous Husk.

In *Tournefort*'s poſthumous Treatiſe we are told that the Seeds are incloſed in Husks, for the moſt part conſiſting but of one Cell, ſometimes of two. By this, I ſuppoſe, the Author means no more than that for the moſt part, each Husk contains but one Seed, and in what ſenſe that is true, I have already taken Notice.

Volkamerus, who had ſeen the Coffee Plant in a bearing State, but has only deſcribed it as far as he thought it neceſſary to determine what Family it was of, tells us, that the Fruit conſiſts of two Kernels, lying upon one another, included in a juicy *Pericarpium*; but I do not ſo well ſee the force of the Inference he draws from thence, that therefore the Coffee Tree is to be ranked among the *Bacciferous* Kind.

What *De Juſſieu* has told us concerning the Fruit upon the Tree is, that it ends in an *Umbilicus*, being at firſt of a light green Colour, then reddiſh, afterwards of a very beautiful Red, and, when perfectly ripe, of a dark Red.

The Pulp is glairous or mucilaginous, of an unpleaſant Taſte, and when dried, becomes like that of a dried black Prune.

Under this Pulp lie two thin oval Coats, cloſely adhering together, convex on one ſide and flat on the other, by which they touch, and of a yellowiſh white Colour.

Monſieur *La Roque* much to the ſame purpoſe, deſcribes the colour of the Fruit to be green at firſt, but that it grows red as it ripens.

The Sun having at length dried this red Fruit, the Pulp becomes a Husk of a dark brown Colour, which makes the firſt or outer *Cortex* of the Coffee Bean, and within it lies another thin Membrane, which makes the ſecond or inner *Cortex*.

Mr. *Bradley* agrees with theſe two Authors, pretty much about the Colour of the

the Fruit upon the Trees, and that is all he has thought fit to tell us that belongs to this Head.

Mr. *Miller* informs us, that each Berry incloſes two Seeds in an inner thin Skin. The Berry therefore, according to this Author, is the outer Coat of the Fruit.

The Kernels of the COFFEE FRUIT.

ALL theſe Coverings being removed, the Kernel its ſelf comes next to be examined; the Colour of which, to begin by that, varies according to the goodneſs and place of growth of the Berry: Thus, ſome of them have a caſt of Green, ſome are whitiſh, ſome dark or brown, and if they are damag'd by ſalt Water, they are perfectly black; but of this more at length, when I come to enquire into the difference and choice of Coffee, or how to diſtinguiſh the Good from the Bad.

As for the figure of the Kernels, that varies likewiſe; but it is principally determined by the number of them in the ſame Fruit. The ſingle ones filling the whole Cavity, have liberty to extend themſelves equally on all Sides, and conſequently the Figure of them is that of a longiſh Oval, with a Cleft on one Side, upon which lies the abortive Kernel, in form of a *Clypeus* or Target, as has been already ſaid, very thin, and of a circular Figure, a little depreſſed on one ſide to accommodate its ſelf to the other.

The double Kernels, for the ſame reaſon, are nearly oblong Hemiſpheroids, being convex on the Back-ſide, and flat on that by which they joyn one another, and in moſt of them it may be remarked, that they are a ſmall matter bigger at one end than the other.

Through the middle of the flat Side of each of them, runs a *Sulcus* or *Rima* lengthwiſe, but generally narrower than that of the ſingle Berries.

The Figure of the triple Kernels is likewiſe to be determined by their ſituation in the Seed Veſſel, but of theſe, I believe, there are very few to be found. The far greateſt part of the Coffee that is imported into *Europe*, conſiſts of ſuch Kernels as have been double in the ſame Fruit; and the Size and Weight of thoſe that are brought from *Java* in the *Eaſt Indies*, and from *Arabia Felix* by the way of *Turkey*, will be ſufficient to determine thoſe of all the other Sorts.

Java

Java Coffee.	*Turkey Coffee.*
Lenth, half an Inch.	Three eigthths of an Inch.
Breadth, five ſixteenths of an Inch.	One eighth of an Inch.
Weight, three Grains and an half.	Three Grains.

The principal Body of each Kernel, conſiſts of a hard, callous or cartilage-like, uniform Subſtance, made up of two *Laminæ*, firſt laid one upon the other, and then rowled and folded up into the Figure we have juſt now deſcribed.

Whoever views a tranſverſe ſection of a Kernel, the firſt Idea of its Structure that will preſent its ſelf, is undoubtedly that of a Body rowled up, as I have ſaid; but I think a more eaſy way to conceive that fully, will be firſt to imagine two oblong hollow Hemiſpheroids caſed cloſely over one an other, and covered with a Lid ſlitted through the Middle lenthwiſe; and then, that this Cavity is filled up by another Body adhering to, or proceeding from the whole under part of one ſide of the Lid, but looſe from the other, under which the Ege of it is turned up, ſo as to form a new kind of *Sulcus* continuous with the former, tho' not always in the ſame right Line.

This inner Body I know no better way to expreſs, than by calling it a Proceſs, ariſing from one ſide of the Slit or *Sulcus* ſo often mentioned.

The ſtructure of a ſingle Kernel is to be conceived much after the ſame manner, only here the Slit is generally wider, the two ſides of it being not flat but convex, and ſo appear rather as a continuation of the ſame Figure with that of the back-ſide of the Kernel, than as a Lid laid over a Cavity. By this means likewiſe the figure of the Cavity varies, and that of the Proceſs along with it. In every thing elſe the ſtructure of both kinds of Kernels is the ſame.

About both the one and the other, there are theſe two Things further to be obſerved: Firſt, that the two *Laminæ*, of which they are compoſed, are not every where of equal Thickneſs, from whence it follows, that one ſide of the Cavity is ſometimes more ſhallow than the other.

In the next Place; the Proceſs does not always come out from the ſame ſide of the *Sulcus*, or which is the ſame Thing, the Kernel is not always rowled up one way; by which I mean, that the ſituation of all the parts of the Kernel, being determined by that of the ſeminal Plant, of which, in the next Article; the Proceſs adheres ſometimes to the right ſide of the *Sulcus*, and ſometimes to the left. *Rauwolfius*

Rauwolfius has taken notice only of the Colour of the Kernels, and that he says, is yellowish.

From *Alpinus* we learn that the Kernels he found in *Egppt*, were of a sweet Tast mixed with a little Bitterness, but no Sharpness. Whether he was altogether in the right in this, I leave to every Bodies Experience to resolve them.

Clusius tells us, that these Seeds are of a dark yellow Colour, acid Taste, and flat on one side.

J. B. That the Coverings being removed, there appears a hard Kernel much of the shape of a Date Stone, with a hollow running through it lenthwise, of a pale ash Colour and a bitter unpleasant Taste. And that all the way from the *Umbilicus* to the opposite Point, it appears as if it were divided into two Grains (*ab Umbilico ad oppositum Mucronem gemina ostentat grana.*)

From the whole of what has been quoted from this Author, it appears plainly, that this Description was taken from a Fruit with only one Kernel; and therefore its not so easy to guess the meaning of the last Words of it. Considering the Place where they lie, I should be inclined to think they were added by his Editors, for they are no ways of a Piece with the rest; or if they do really belong to *Bauhinus*'s own Text, I can make no more of them than this, That when a single Kernel is viewed on that side in which the *Sulcus* lies, it appears as if it were divided into two Grains.

Whatever be in that, there is nothing in all this Description that contradicts what we have heard from *Clusius*, and therefore I cannot imagine the reason why *J. B.* should add, that tho' the outward appearance of his Fruit answer'd in every thing to the Figure given us by *Clusius*, yet there were other things in which they did not agree; and therefore he durst not venture to say that his was the same with that from whence *Clusius*'s Figures were taken. It may be his Scruple was grounded upon this, that *Clusius*'s Berries were double, and his own single.

By *Olearius*, the Colour of the Coffee Kernels is compared to that of common Wheat, and the Taste to that of *Turkey* Wheat.

We have heard already, that according *Vestingius*, the Taste of them is very sensibly bitter.

Parkinson informs us, that on each side of the Husk of the Coffee Fruit, lieth a small long white Kernel, flat on that side they join together, of an acid Taste and somewhat bitter with all.

Banesius distinguishes the Coffee Kernels into two Sorts, with respect to their Colour; the one he says is whitish, the other of a darkish Citron Colour, tending towards a Green; and these last are to be preferred to the other. All this is true enough in fact, but it seems to be owing to our Authors not having understood *Avicenna*, that ever he was so lucky as to observe it. *Avicenna* has told us the same thing of a Root which he calls *Bunchum*; and *Rauwolfius*, *Banesius*, and others, being deceived by the similitude both of the Names and Virtues, have taken this for the *Buna* or Coffee Fruit, but *Salmasius* and *Velschius* have abundantly proved they were in the wrong.

The curious Enquiries that the learned Dr. *Grew* has made concerning Seeds, as well as all the other parts of Plants, have furnished him with some very uncommon Observations concerning the Coffee Fruit in particular, besides what he has said about other Seeds which will equally agree to it. These last I leave to be consulted in his excellent Anatomy of Plants, the others must not be omitted here. Having described the Coverings that belong to Seeds which he proves in the far greatest part of them to be three in Number, he observes that in many, there is a *Vitellum* or Body analogous thereunto, which is neither part of the true Seed nor part of the Covers, but distinct from them both. This, he tells us, makes sometimes the principal part of the Fruit, being much bigger than the true Seed its self; and in enumerating the different Figures, Dispositions and other Properties of these *Vitella*, amongst the rest he observes, that in the Goose-gras or Cliver it is of a horny Substance, but shaped somewhat like a Bonnet with the Rims tucked in; and so in the Coffee Berry, but rowled or folded up into a kind of oval Figure, with a Notch or *Ri-*

ma running through the Lenth, where the two ends meet.

This Paſſage contains the only Hint that is to be met with in Authors, concerning the true ſtructure of the Coffee Kernel, and I hope that by the account I have given of it in my Deſcription, it will ſtill be more eaſily underſtood.

Dr. *Robinſon* has obſerved but little new upon this Head. Under the ſecond Skin, ſays he, lie generally two Kernels, ſometimes one, round on one ſide, and flat on the other. On the flat ſide of the Kernel there is always a Slit or Mouth, ſo that every Kernel does exactly reſemble a *Concha Veneris*.

Lemery compares the two Kernels together to a young Pea in bigneſs; and tells us further, that they are of an oval Figure, eaſily parting into two Halves, of a yellowiſh Colour with a caſt of White.

Langius. That the *Cortex* being removed, the Kernel is of a mealy Taſte.

Tournefort. That the Seeds are hard, of a whitiſh aſh Colour, convex on one ſide, flat on the other, and furrowed; of a mealy Taſte and without any ſmell; five or ſix Lines in lenth and three in thickneſs.

Chomel and *Andry* agree in every thing with *Tournefort*, only the laſt adds, that theſe Seeds are very heavy in proportion to their Bulk.

Monſieur De Juſſieu's Obſervations about the Kernels are theſe. In each of the inner Coats, ſays he, is contain'd a callous, oval Seed, arched on the back ſide and flat on the other; in the middle of which is a pretty deep *Sulcus*, running through its whole Length.

Sometimes one of theſe Seeds proves abortive, and then the other grows commonly bigger than it would otherwiſe have been; both ſides of it become more convex, and it fills the whole cavity of the Fruit.

Monſieur la Roque has added ſome new Obſervations concerning the Kernels of the freſh Fruit, to thoſe of *Monſieur de Juſſieu*. Under the Pulp, ſays he, lies the Bean or Grain which we call Coffee, and when the Fruit hath arrived at its full bigneſs, the Bean is extremely tender, and of a diſagreeable Taſte, but as the Fruit ripens, it acquires by degrees, a little more Solidity, and by the time that the Pulp is nearly dried up, the Bean is become pretty hard, and of a light green Colour, ſwimming in a thick brown and bitter liquor.

Valentini takes notice that what is called Coffee, is nothing but the Kernels of certain ſmall Nuts, conſiſting of two Parts like Beans, arched on the upper ſide, flat and furrowed on the under, of a dark yellow Colour, mealy Taſte, and Smell like that of burnt Beans. He ſhould have told us that it was the ſmell of roaſted Coffee he meant, and then the Compariſon might paſs.

Bradley tells us, that inſtead of a ſingle Stone, the Coffee Fruit has two Kernels, which ſplit in the Middle like the Bay Berries of the Shops. It is true, the Coffee Kernels do ſplit in the Middle, and ſo do the Bay Berries of the Shops, but wherein the likeneſs of their ſplitting conſiſts, I ſhould be glad to learn.

Of

Of the Seminal Plant, or True Seed of the COFFEE FRUIT.

WE have heard from Dr. *Grew*, that the main body of the Kernel, deſcribed in the laſt Article, is not the true Seed, but only a *Vitellum*, or Body analagous thereunto, which he ſometimes likewiſe calls the bulky or Cartilaginous Cover of the Seed.

As he is the only Author who has obſerved this Difference, ſo no body but himſelf has deſcribed what the true Seed, as diſtinguiſhed from the *Vitellum*, really is. The *Fætus*, or true Seed in the Coffee Berry, ſays he, lies in the inner or Cartilaginous Cover, where one would not expect to find it, near the Top or Surface of the Back. The Lobes of the Seed are veined like two very minute Leaves, and joyned to a long Root like a Stalk, the end of which comes juſt to the bottom of the Cover, ready for its exit into the Ground.

All this he has expreſſed by five Figures in *Tab.* 77. of his *Anatomy of Plants*; whereof the firſt exhibites the belly or furrowed ſide of the Coffee Berry; the ſecond, the Back; the third, the Back pared a little, ſo as that the true Seed may appear in *ſitu*; The fourth repreſents the true Seed taken out of the Kernel, and the fifth ſhows it very much magnified.

This is the Account Dr. *Grew* has given us of the true Seed, or as it is called by *Malpighi* and others ſince his time, the *Seminal Plant* of the Coffee Fruit; and whoever is acquainted with Dr. *Grew*'s Writings, knows that according to him, in every ſeminal Plant there is to be diſtinguiſhed the *Radicle*, *Lobes*, and *Plume*. This Remark was neceſſary, in order to the underſtanding of ſome Terms which I ſhall be obliged to make uſe of in explaining what further Obſervations I have made upon this Head, both with reſpect to the Situation and Structure of the Seminal Plant.

It lies between the two *Lamellæ* of the *Vitellum* or Body juſt now deſcribed, in a Bed exactly fitted to it; the *Radicle* always terminating at the extremity of the *Sulcus*, which in an intire Kernel, may be diſcovered by a round Speck, of a different Colour from the reſt of the Surface.

As the back of the Kernel is convex, the Seminal Plant, to accommodate its ſelf to that Figure, is likewiſe bent upwards, and ſo lies crooked.

The Poſition of it is not exactly according to the lenth of the Kernel, or parallel to the longeſt Diameter of it, but oblique; it being all on one ſide of the *Rima*, as may be ſeen by Candle-light, even with the naked Eye, in an intire macerated Kernel.

It is not however always on the ſame ſide, but ſometimes on the right, ſometimes on the left; and yet this Poſition is no ways caſual, but regulated by the Rowl or Fold of the Berry; that is, the Seminal Plant lies always on that ſide of the *Sulcus* to which the Proceſs is fixed.

The Seminal Plant being taken out of the Kernel, we may obſerve the Figure of it to be exactly that of the Ace of Spades, only that the *Radicle* is longer in proportion to the *Lobes*.

When it is freſh taken out, the Colour of it is lighter than that of the reſt of the Kernel.

The *Radicle* or little Root, as far as I can perceive, is exactly round, and runs tapering from one end to the other, that to which the *Lobes* adhere being ſmalleſt, as is expreſſed in one of Dr. *Grew*'s Figures.

The *Lobes* or Leaves may eaſily be ſeperated from one another, all the way to their inſertion into the *Radicle*, but nothing like a Plume is diſcernible betwixt them.

Thus far concerning the Seminal Plant of the Coffee Fruit. I have only further to remark, that the contrivance of the ſituation of it, and indeed of the ſtructure of the whole Kernel, is very particular. The extremity of the *Radicle* is placed in the weakeſt part of the whole Kernel, and conſequently finds the eaſieſt Paſſage poſſible into the Ground: The two *Lamellæ* are here, as it were, only tucked in, and ſo, ſmall *Rimæ* or Chinks muſt neceſſarily be left, which in dried Kernels are oftentimes increaſed to very ſenſible Clifts. Beſides, upon the leaſt ſwelling of the Kernel in the Ground, theſe Folds muſt extend themſelves, and by this means likewiſe, favour the exit of the *Radicle*.

Again, by the *Radicle* and tender *Lobes* being placed obliquely, and always on that ſide to which the Proceſs is fixed, they lie in the moſt ſecure part of the whole Kernel, which would have been otherwiſe, had they lain ſtreight, and ſo over the *Sulcus*.

The Kernel its ſelf is rolled up in the manner we ſee it, not only for the ſecurity of the Seminal Plant, but alſo that it may unfold by more eaſy Degrees, according as the *Lobes* and *Plume* are ready to expand themſelves. The firſt of theſe Ends accounts likewiſe for

for the neceſſity of the Proceſs, the ſecond for that of the *Rima* or *Sulcus*, and both the one and the other, for the Kernels being made up of two *Lamellæ*. But as this unfolding will require Time, the *Radicle* probably gets a very ſure footing in the Ground, before the ſeminal Leaves reach the Surface of it.

Culture of the COFFEE TREE *in* Arabia Felix.

THE Coffee Shrubs, Sir *Hans Sloane* obſerves, are planted in *Arabia Felix* every where, in a rich Ground or Mold in great Plenty, and they are watered in Times of Drought, as other cultivated Vegetables there are, by artificial Channels from Rivers, cut on purpoſe to nouriſh them. After three or four Years bearing, the Inhabitants are forced to plant new Shrubs, becauſe the old ones become not ſo fruitful after that Time.

It is likewiſe worth taking notice, that in thoſe Parts they dry the Fruit in the Sun, and afterwards take off the Husks, by means of Hand-mills, as they do here Husks of ſeveral ſorts of Grain, to fit them for uſe.

The greateſt Part of theſe Obſervations are agreeable to what we are told by *Monſieur La Roque*. Our Travellers, ſays that Author, are very poſitive, that the Coffee Tree is raiſed no other way but by the Seed, the intire Fruit with all the Coverings upon it being ſet in the Ground. From theſe Nurſeries of young Plants are raiſed, which they afterwards tranſplant as there is occaſion.

The Plantations are chiefly made near the feet of Mountains, and upon gentle riſing Grounds; and they always chooſe ſuch Places as are moſt ſhady, and beſt ſupply'd with Water.

The greateſt part of the Culture conſiſts in bringing Water from Sources, and little Rivulets found in the Mountains, by Streams or Channels carried on purpoſe, quit round the Trees; for they muſt be well watered and kept moiſt, in order both to fructify, as they ought, and to bring their Fruit to due Maturity. And therefore, whenever the *Arabians* have a mind to tranſplant young Trees, they begin by making a Ditch three Foot wide and five deep, which they border or line with Pebles and Flint Stones, that the Water with which the Ditch is filled, may the more eaſily penetrate a great way into the Earth, and ſo preſerve a due Moiſture there. But when they ſee a great deal of ripe Fruit upon the Trees, they ſet off the Water from about them, that the Fruit may not be hindered from drying upon the Branches, as much as is neceſſary it ſhould.

If the *French* Officers had not travell'd to *Movab* the Capital of *Yemen*, we ſhould ſtill have been ignorant of one Particularity which relates to the Coffee Trees, and has hitherto been taken notice of by no Author, *viz.* That in Places that lie towards the South, or are very much expoſed, the Coffee Trees are planted under other great Trees, which they take to be a kind of Poplars, and theſe ſerve to skreen them from the exceſſive heat of the Sun. The Inhabitants are perſwaded, that without this Shade, the Flowers of the Coffee Tree would be ſoon quite burnt up, and ſo never produce any Fruit, and our Travellers were convinced of the truth of this, by what they obſerved in ſome Trees, growing in ſuch Places without the advantage of a Shade. Theſe Poplars extend their Branches very much on all ſides, and form a ſort of *Umbrella*, which covers intirely whatever is found under it.

It was at ſome diſtance from the City of *Tagus* where they ſaw the firſt Coffee Trees, that they likewiſe obſerved this Singularity; the Country being there open, and much expoſed to the burning heat of the Sun. Each Poplar had a certain number of Coffee Trees under it, through the whole Plantation; they being planted in rows, as they do the Apple Trees in *Normandy*.

In other Places which are not ſo much expoſed to the Sun, theſe ſhady Trees are not to be found, there being no occaſion for them: But there, as well as every where elſe, the Coffee Trees ſtand in Lines, at a ſmall diſtance from one another.

I cannot help obſerving here, by the by, that it was undoubtedly the Coffee Trees being planted under others, that led *Monſieur Bernier* into the miſtake of thinking this Plant a Species of the *Convolvulus*. Dr. *Robinſon* has long ago made this Remark, but it could not be known at that Time, what had given occaſion to *Monſieur Bernier*'s Miſtake.

But to go on with *Monſieur la Roque*. As for the Coffee Harveſt, ſays he, ſince the ſame Tree is at the ſame Time often loaded with Flowers, and green and ripe Fruit; that muſt neceſſarily happen at three different Seaſons; but as theſe are not all regular and fixed, the *Arabians* reckon but one Harveſt in the Year, which is always in *May*, the far greateſt quantity of Coffee being gathered at that Time.

For this purpoſe they ſpread a Canvas under the Tree, and then ſhake it; and this brings away with eaſe all the Coffee that is throughly ripe.

As ſoon as it is gathered, they put it into Sacks, and carry it to a convenient Place for drying. There they lay it in Heaps upon Matts, expoſed to the Sun, till ſuch time they think the Husks may be eaſily got off, by means of large Stone or Iron Rollers, which they draw over them for that Effect.

When the Beans are thus cleared from the Husks, and parted in two in the manner we ſee them, they are laid out to dry in the Sun a ſecond time, being as yet too green and moiſt to ſuffer the Sea; afterwards they winnow them with great Fans, till they are thoroughly clean; for without that Care, their Coffee does not ſell at near ſo great a Price as otherwiſe.

Thus far *Monſieur la Roque*; and by all theſe different parts of Labour is Coffee made fit for Uſe or Sale; being tranſported in this State, in immenſe Quantities, from one Province of *Arabia Felix* alone, thtough all the reſt of *Aſia*, and *Europe*, and a good Part of *Africa* and *America*.

Whether the Arabians *uſe any Art to prevent the growth of the* Coffee Plant *in other Countries.*

WHO was the Inventor or firſt relater of this Story, That the *Arabians* ſpoil the geminative Faculty of the Coffee Fruit, I cannot find. Of all the Authors I have conſulted, *Du Four* is the firſt who has mentioned it; but at the ſame time he talks of it as a thing that had been often ſaid before him; neither is he at all inclined to think it is true.

A great many People aſſure us, ſays he, that the Coffee Fruit is boiled, or paſſed through a hot Oven before it be expoſed to ſale, in order to deſtroy the *Germe* or vegetative Principle in it, for fear it ſhould be ſown elſewhere. Others maintain the contrary, and their Opinion is grounded on a Reaſon, which to me ſeems undiſputable. If it were true, ſay they, that Coffee is either boiled or heated in an Oven before it is exported from *Arabia*, it would be a very rare thing to find any Berries with the Skins upon them, for theſe being but thin, would neceſſarily be conſumed at the firſt approach of fire, and yet a great many ſuch Berries are to be met with in the Coffee that comes to theſe Parts; beſides, the Fire would give it a burnt Taſte or Smell, which nevertheleſs we do not perceive it hath.

Thoſe

Thoſe who are for the other ſide of the Queſtion, anſwer, that the Tree which bears the Coffee, being a Plant of ſo great Conſequence, it is impoſſible to think that either Curioſity, Neceſſity or Intereſt, muſt not have naturalized it in ſome other Country before this Time, if the germinative faculty of the Fruit were not loſt before it reaches any other Place. But ſuch People do not duly attend to the diſpenſations of Providence, which has given to every Country, excluſive of all others, the privilege of producing ſome Things, which all the Induſtry of Man can never render common in any but that.

Dr. *Robinſon*, tho' without giving any reaſon for it, is of a different Opinion from *Monſieur Du Four*. The *Arabians*, according to him, are as careful in deſtroying the germinative Faculty of the Coffee Fruit or Seed, as the *Dutch* of the *Moluccos* are in their Nutmegs.

This Opinion is likewiſe adopted by Mr. *Ray*, and he has tranſlated Dr. *Robinſon*'s Words into *Latin*, without ever inquiring further about the truth of them. It was probably new to him, and therefore made a very proper Material for his Botanical common Place Book, I mean his *Hiſtory of Plants*; where the Queſtion, generally ſpeaking, is what Authors have ſaid, but ſeldom whether they were in the right for ſaying ſo.

Monſieur Du Mont has talked more reaſonably upon this Subject. It is a Miſtake, ſays he, to believe that the *Arabians*, either by Fire or Water, endeavour to prevent the propagation of Coffee elſewhere. Nature has ſaved them this Trouble, in giving the Country of *Yemen* alone, the Qualities neceſſary for producing this Plant in any Plenty, and refuſing it to all others. Of this the *Turks* have had the Experience in an hundred Places of *Anatolia* and *Romania*, ſo that after all their Trials, they are ſtill obliged to go and buy their Coffee at *Suez*.

Blegny advances two other Reaſons againſt this Opinion, both drawn from Matters of Fact. The firſt is, That a Gentleman, near *Dijon* in *Burgundy*, ſowed ſome Coffee Seeds as they came from the *Levant*, which produced Plants every way like thoſe that grow in *Arabia*. This has been ſince contradicted, but his ſecond Reaſon, I my ſelf have experienced the Truth of, namely, that if a Berry is kept but a Day or two in cold Water, it will begin to Chit.

Houghton made the ſame Experiment, but not with the ſame Succeſs. I put ſome Berries into a glaſs of Water, ſays he, about a Week

Week ſince, to ſee if they will ſprout, but as yet there is no appearance, altho' they are tollerably ſwell'd and look white and bright. But he adds, that by making a Decoction of them, he has made them ſhoot.

Another convincing Proof of the falſity of this Reproach made to the *Arabians*, is given us by *Monſieur de Juſſieu*, in theſe Words: When the Seeds are ſet in the Ground as ſoon as they are pulled from the Trees, they will hardly fail to ſucceed, but after any conſiderable time, they ſeldom come to any Thing; and this juſtifies the Inhabitants of the Coffee Country, from the Accuſation they have been loaded with, of boiling or drying by Fire, all the Coffee they ſuffer to be exported, leaſt it ſhould be ſown in any other Country.

All theſe Arguments notwithſtanding, Mr. *Bradley* has thought fit to publiſh this Story lately from Mr. *Ray*, that is at leaſt from the third Hand; and in ſo doing he is more inexcuſable than any of the other two. So Prudent are the Maſters of that Country, ſays he, ſpeaking of *Arabia Felix*, that on no account will they ſuffer either Plant or Seed to come alive out of their Dominions, taking great care to deſtroy the Germinative Faculty of thoſe Berries they ſend Abroad, and inflicting the moſt ſevere Puniſhments on ſuch as attempt the Tranſportation of any Plants of it.

That the *Arabians* prohibit the Tranſportion of Coffee Plants under the ſevereſt Penalties, is very reaſonable to ſuppoſe, but I am ſurprized to hear Mr. *Bradley* talk of the Germinative Faculty being deſtroyed in all the Seeds they Tranſport, and that he ſays no more about it. For in the firſt Place, in another of his Books, he has given us two very good Reaſons why any ſuch Practice as this (were it poſſible without damaging the Seeds) is altogether needleſs. The Coffee Berries, according to him, muſt be planted with one of the Husks on, therefore ſince both the Husks are taken off with all poſſible Care, as being what inhances the value of the Coffee; they have no occaſion to uſe any other Art, to prevent its being propagated from Seeds they ſend Abroad.

Again Mr. *Bradley* tells us, the Seeds muſt be planted as ſoon as they are gathered, and he has even inſiſted, at great length, on the abſolute neceſſity thereof; there is therefore certainly no danger of any Plantation being begun in other Countries by Seeds: And accordingly we find that the *Dutch* never thought of cultivating Coffee in the Iſland of *Java*, 'till they had firſt, by a lucky Stratagem, found the means of getting ſome Plants from *Arabia*.

In the ſecond Place, how could Mr. *Bradley*, a Philoſophical Botaniſt, and who had before the publication of his Treatiſe on Coffee, written ſo much concerning the Theory of Vegetation, menti-

on ſo ſingular a *Phænomenon* as this, without at leaſt endeavouring to account for it? Eſpecially after what he might have found upon this Subject, in Dr. *Grew's Anatomy of Plants*, in which it is ſhown, as we have already heard, that let the Germinative Faculty of the Coffee Berries be deſtroyed never ſo much, the *Germe* it ſelf is not; the Seminal Plant being ſtill as plainly diſcernible in the Coffee as it is brought to us, as in any other Seed whatever.

Theſe two Reflections relate chiefly to Mr. *Bradley*, tho' the firſt of them may be applied to the fact in Queſtion, about which ſome further Obſervations from *Monſieur la Roque* deſerve ſtill to be added.

It is the general Opinion, ſays that Author, but of which the Learned begin to ſee the Folly more and more every Day, that the *Arabians*, jealous of this Commodity only to be found amongſt them, never ſuffer ſo much as one Coffee Bean to go out of their Country, which has not paſſed the Fire, or been boiled in Water, to kill the *Germe*, as is pretended, that ſo, if any body had a mind to ſow it in another Country, it might be to no purpoſe. *John Ray*, an *Engliſh* Doctor, and one of the moſt celebrated Botaniſts of our Time, has given in to this vulgar Error, as well as the reſt; for after talking of the Virtues of Coffee, he tells us very ſeriouſly, that it is ſurpriſing how the *Arabians* ſhould prevent the exportation of ſo much as one Grain of Coffee into another Country, that is capaple of producing a Plant, *&c.* But this is a Miſtake, for which there can be no further Pretence, after the Aſſurances our Travellers have given us of the contrary; and after the intire Bales of Coffee in Husk, which the *French* Veſſels brought along with them; for theſe certainly had undergone no change.

Explana-

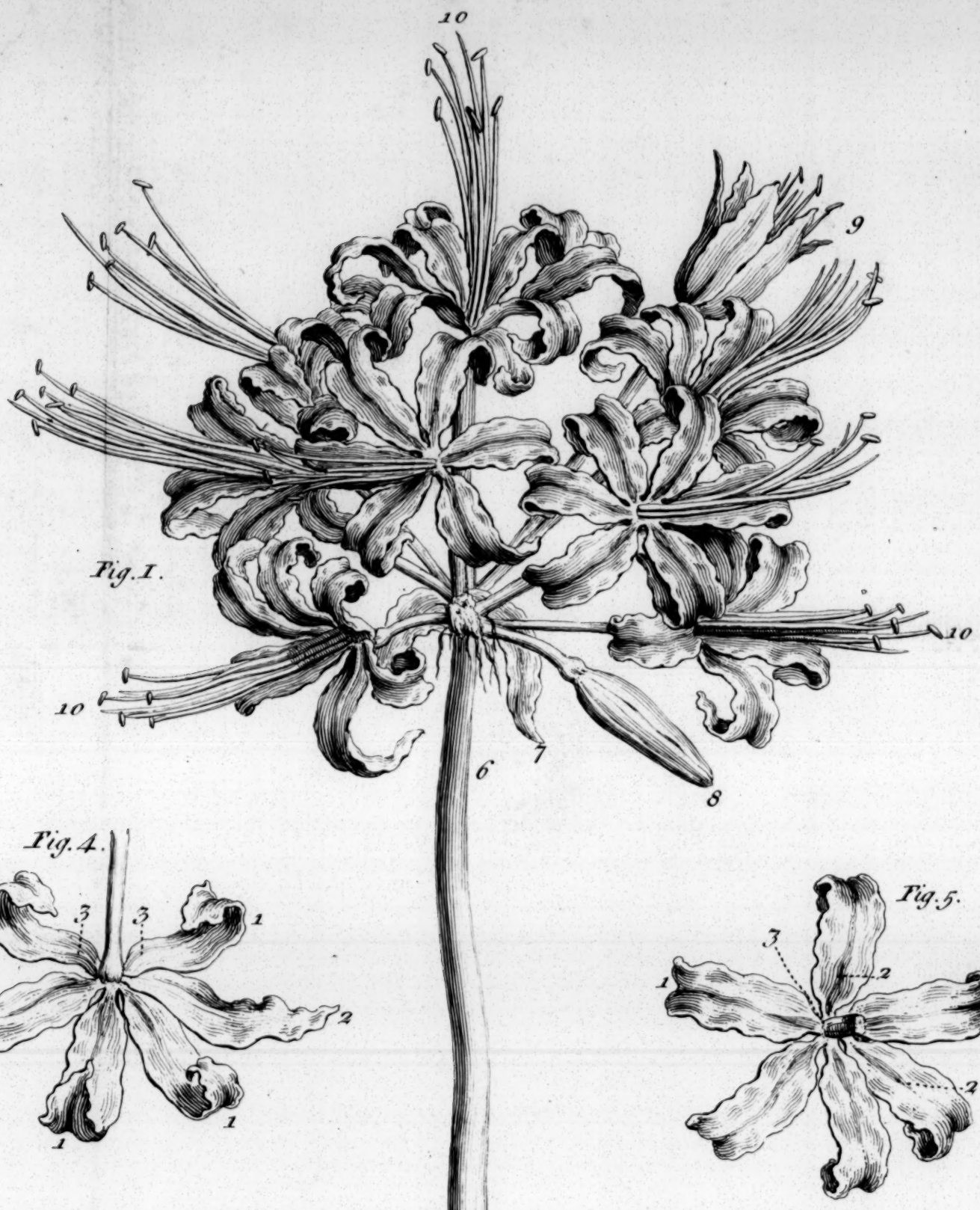
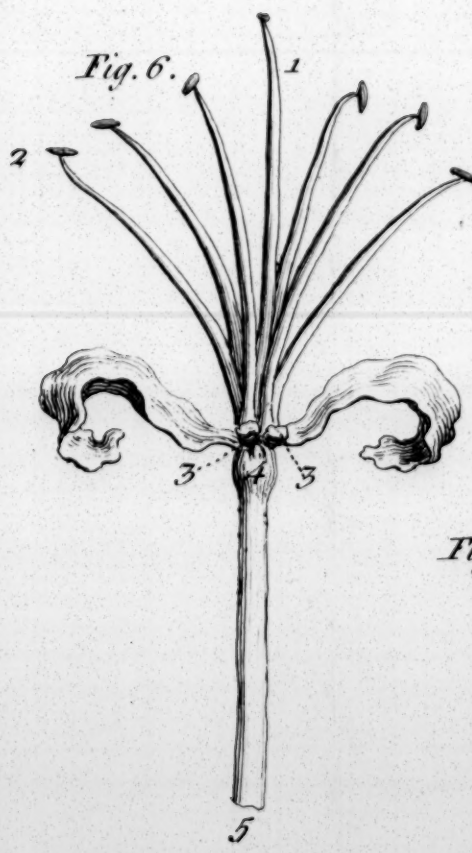


Fig. I.

Fig. 4.

Fig. 5.



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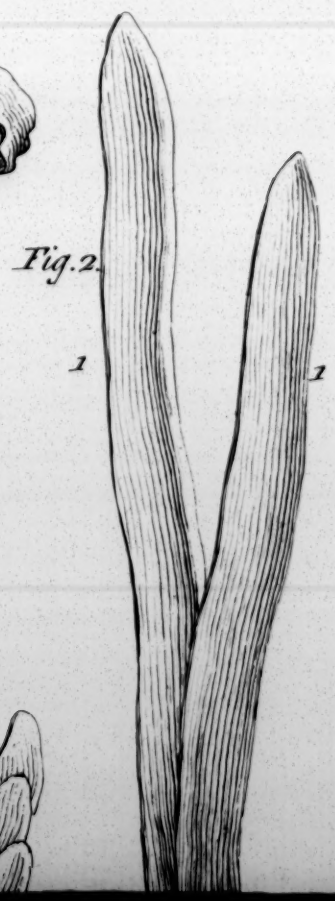

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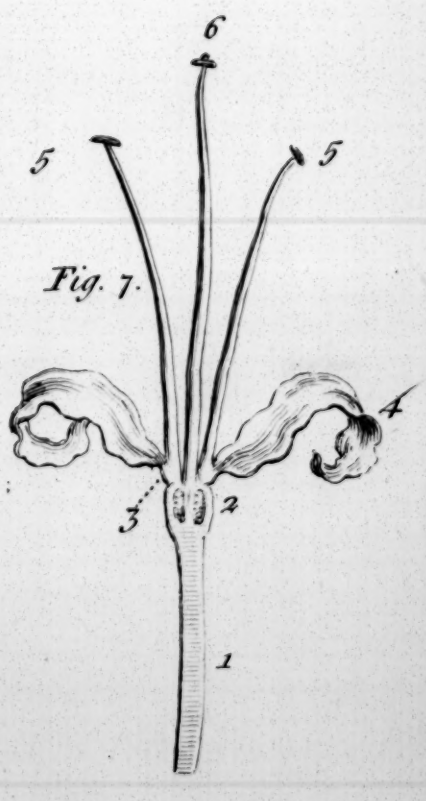

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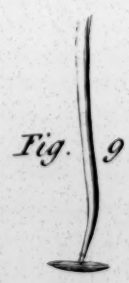

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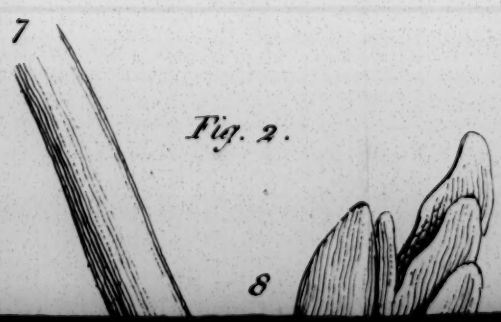


Fig. 2.

Fig. 8.

Fig. 3.

Fig. 2.

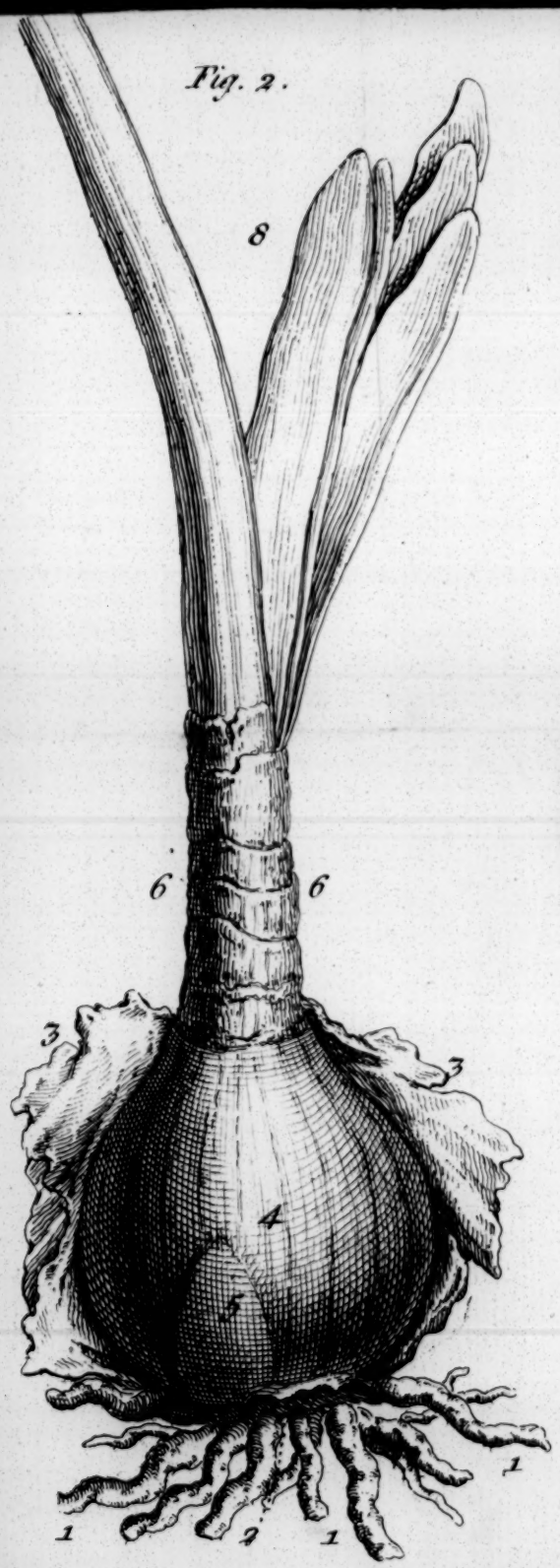


Fig. 3.

Fig. 8.

Fig. 10.

G. V^de Gucht Sculp^t.

Explanation of the Figures belonging to the GUERNSAY LILLY.

TAB. I.

FIGURE I.

IN this Figure the *Guernſay Lilly* is delineated in full Bloſſom, juſt as it was taken out of the Ground, intire in all its Parts, one Flower only being cut off.

1. Fibrillæ, *or ſmall Strings of the Root.*
2. Fibræ *or* Radiculæ.
3. *The bulbous part of the Root.*
4. *The Neck or narrow part of the Root; both covered with the external* Involucra.
5. *The Leaves beginning to ſprout on one ſide of the Stalk.*
6. *The* Caulis *or Flower-ſtem, which in this Figure appears more bent, than for the moſt part we obſerve it in the Plant its ſelf.*
7. *The* Perianthium.
8. *A Flower not blown.*
9. *Another a little opened, to ſhow the* Stamina *and* Apices *juſt coming out.*
10. *All the other Flowers in full Bloſſom, with the* Stamina *and* Apices *drawn confuſed as they appeared to the* Deſſinateur.
11. *The Root of the* Petiolus *of the Flower that was cut off.*

FIG. II.

REpreſents the Root of a flowering Plant, diveſted of its external *Involucrum.*

1. *The Roots cut ſhort.*
2. *The* Baſis radicis.
3. *The outer Cover divided and thrown back.*
4. *The Lines which are very plain aud conſpicuous upon the inner or ſecond Covering of the bulbous part of the Root.*
5. *A* Surculus *or Off-ſet ariſing from the* Baſis radicis.
6. *The ſhriveled or dried Edges of the longitudinal Coats, on the narrow part of the Root.*
7. *The* Caulis Floriger, *or Flower Stalk cut off.*
8. *The Leaves.*

FIG. III.

SHews the *Perianthium* with the *Laciniæ* diſplayed, the Stalk and *Pedunculi* being cut off.

1. *The largeſt portion of the* Perianthium *or Cover Flower.*
2. *The narroweſt Part of it.*

3. *The*

3. *The* Laciniæ.
4. *The Roots or Beginnings of the* Pedunculi.

Fig. IV.

HEre the Back-ſide of one Flower is exhibited; two of the *Petala* being drawn out at length to ſhew the Pinch.

1. *The Extremities of four of the* Petala *turned back, as they appear in this View.*
2. *The other two drawn out at length, to ſhew the undulation or pinching on the Edges near the Extremities.*
3. *The* Coſta *or Rib running along the middle of the Flower Leaf.*

Fig. V.

DEmonſtrates the fore-ſide of a Flower in its full Bigneſs, the *Stamina* and *Stylus* being cut off.

1. *The* Petala *or Flower Leaves.*
2. *The* Sulcus *on the Inſide.*
3. *The* Unguis *or narrow Neck ariſing from that Part called the* Umbilicus Floris.

Fig. VI.

IN this Figure the *Stylus* and *Stamina* are laid out to ſhow their true Dimenſions; all the Flower Leaves, except two, being cut off.

1. *The* Stylus.
2. *The* Stamina *crowned with the* Apices.
3. *The* Umbilicus Floris, *whence the* Stamina *and* Petala *ariſe, lying between them and the* Vaſculum Seminale.
4. *The* Vaſculum Seminale.
5. *The* Pedunculus.
6. *Two of the Flower Leaves.*

Fig. VII.

IN this View the natural and ordinary turning of the *Petala* is fairly repreſented; all the Flower Leaves, except two, being cut off. The *Stylus* likewiſe is here delineated with its triangular *Apex*, and the *Vaſculum Seminale* and *Pedunculus* are divided.

1. *The remaining half of the* Petiolus, *which ſhows the inner Subſtance.*
2. *Two of the* Loculamenta Seminis *filled with ſmall whitiſh Seeds.*
3. *The* Umbilicus *of the Flower.*
4. *The Flower Leaves in their uſual Turn and Shape.*
5. *Two* Stamina.
6. *The* Stylus *with its triangular Extremity.*

Fig. VIII.

HEre the three *Loculamenta* or Cells in the *Vaſculum Seminale* are laid open, to ſhow the numerous ſmall Seeds therein contained.

Fig. IX.

REpreſents the *Apex Verſatilis* on the Extremity of the *Stamen*, as big as it always appears at its firſt coming out.

Fig. X.

THis Figure ſhows two Leaves ſurrounded by the innermoſt longitudinal Coat of the Bulb.

1. *The two Leaves.*
2. *The Longitudinal Coat.*
3. *The Baſis of the Root.*

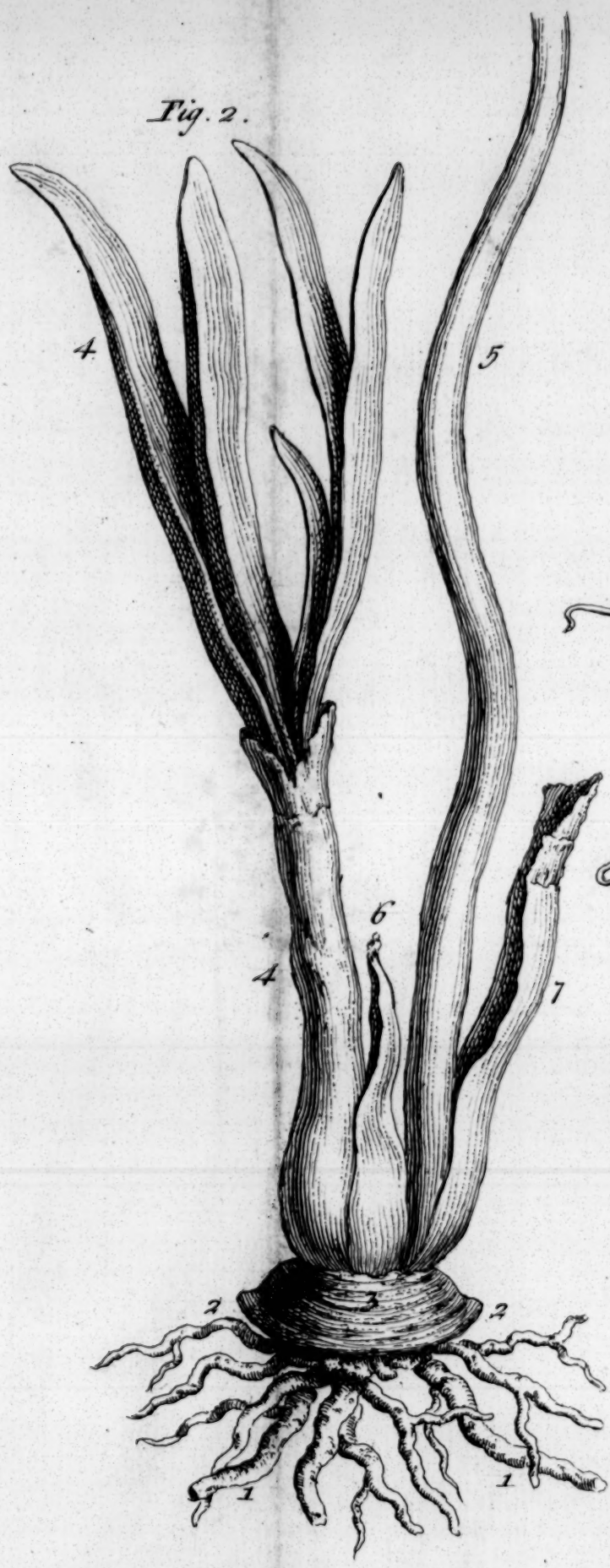
Fig. XI.

EXhibites two Leaves ariſing from the *Fundus radicis*, diveſted of all the Coats or *Tunicæ*, of which the whole Root is made up.

1. *The green part of the* Folia.
2. *The whitiſh Part that lies within the Bulb.*
3. *The* Baſis Radicis *or* Truncus Radicalis.

TAB. II

Fig. 2.



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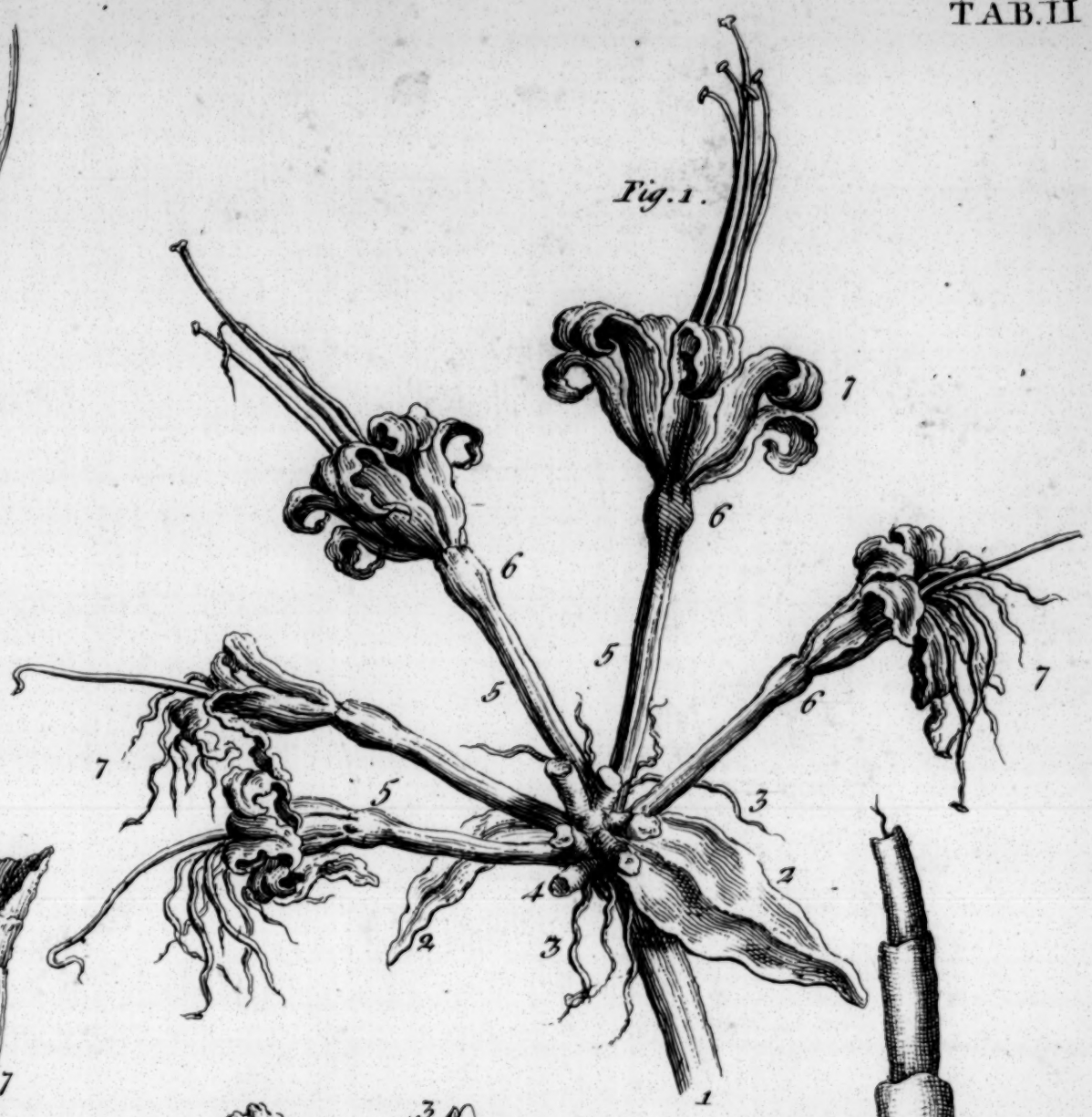

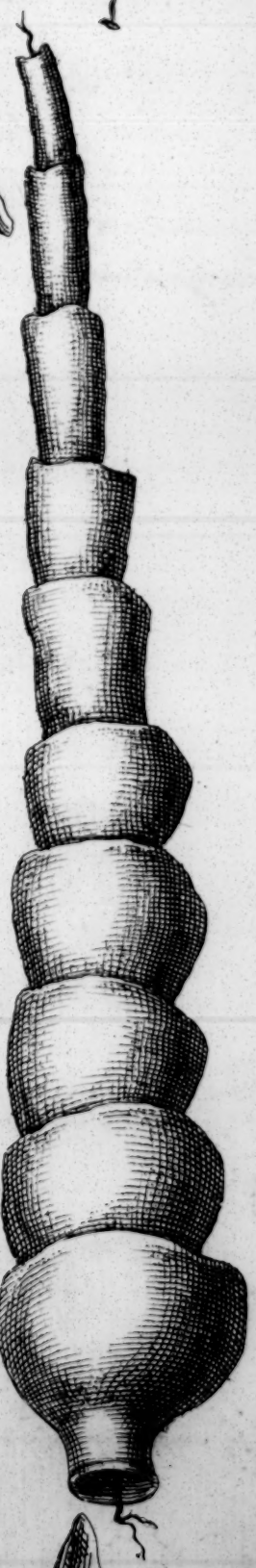

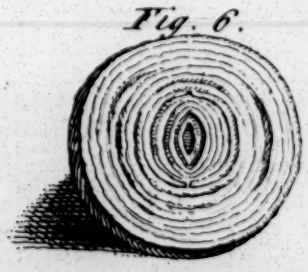

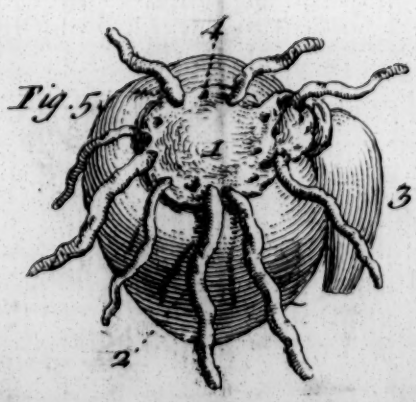

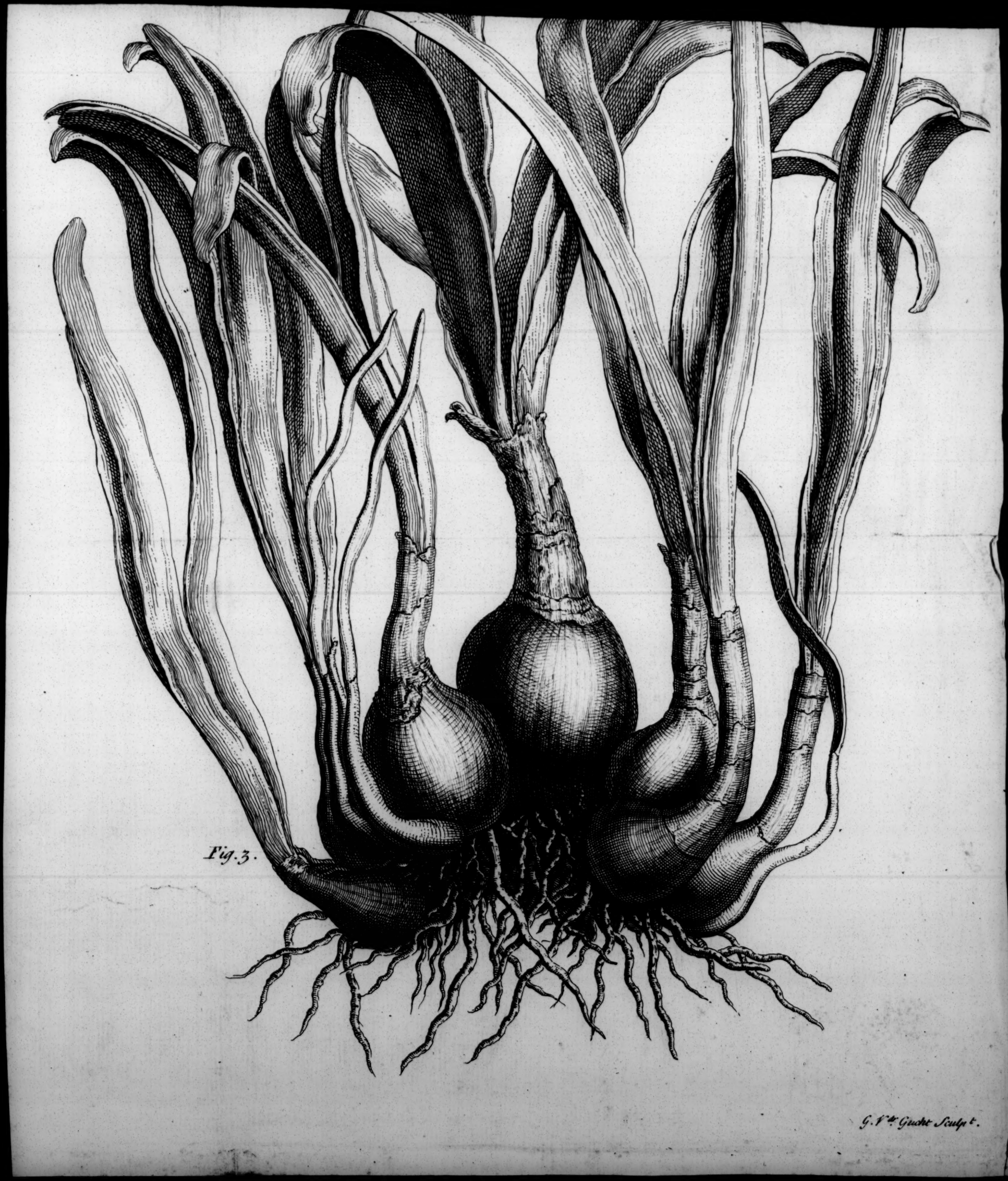

Fig. 3.

G. V.t Gucht Sculp.t

TAB. II.

FIG. I.

HERE are represented five of the Flowers in a decaying or whithering State; the rest being removed that the *Pedunculi* may come more in sight.

1. *Part of the Flower Stem.*
2. *The two Portions of the* Perianthium.
3. *Some of the* Laciniæ.
4. *The Roots of the* Pedunculi *which were cut off.*
5. *The remaining* Pedunculi *appearing of different Lengths and Dimensions.*
6. *The* Vasculum Seminale.
7. *In the decaying Flowers we may observe some more, some less withered in the same Degrees as when they Blossomed; and likewise that the* Stamina *fade and fall before the* Stylus.

FIG. II.

EXhibites the beginnings of the Leaves and Flower Stalk arising from the *Fundus radicis*, distinct or seperate from one another.

1. Fibræ.
2. Basis Radicis.
3. *Some part of the circular Coats left on.*
4. *The Leaves involved by two longitudidinal Coats distinct from the Stalk.*
5. *The* Caulis Floriger *coming likewise from the* Basis.
6. *A single Process between this and the Leaves.*
7. *A sort of half Coat which is proper to the* Caulis, *but does not quite surround it.*

FIG. III.

IN this Figure is delineated a fine Groupe or bunch of Roots, with green Leaves; the Mother Bulb being in the Middle, and her numerous Off-spring of different Year's growth, on each side; as it was taken out of the Ground in *November* last.

FIG. IV.

THE several *Tunicæ* or Coats of which the Root is made up, taken off from one another and kept together by a String, are fairly represented in this Figure.

FIG. V.

EXhibits the *Basis* or Bottom of the Root.

1. *The* Basis *or* Truncus Radicis.
2. *Part of the* Bulb *sticking to it.*
3. *An Off-set arising from a knobby Part or Bunch which proceeds from the* Basis.
4. *Small Depressures like Holes between the* Fibræ.

FIG. VI.

REpresente an Horizontal Section of the bulbous part of the Root, to show the circular situation of the Coats, with Leaves coming up in the Middle.

FIG. VII.

HEre we see the whole Root cut perpendicularly to the Horizon, to show the above-mentioned Parts in another View.

1. *The* Basis Radicis, *with some of the* Fibres *faintly represented.*
2. *The Coats, both Circular and Longitudinal, arising from thence.*
3. *Two Leaves arising from the* Basis *and ascending through the middle of the Root.*

FIG. VIII.

SHows the inside of a longitudinal Coat cut open and laid back.

FIG. IX.

REpresents the outsideof another Coat; and both have Part of the dried Leaf adhering to them.

N. B. I Have this further to acquaint the Reader with, that as a Supplement to this Treatiſe, there will be publiſhed in due Time, whatever Accounts I ſhall be favoured with from the Curious, or find in other Books relating either to the Deſcription or Hiſtory of this Plant: As alſo ſome more Figures, repreſenting the Leaves from their firſt budding out from the *Baſis* of the Root, till they are formed into new *Involucra* or Coats, to the Leaves that ſucceed them the Year after; and likewiſe of the Flower Stalk and Flowers, from their firſt Formation to the Time that they are quite Blown.

F I N I S.

ADVERTISEMENT.

WHereas his Majeſty has been graciouſly pleaſed, by a Gratuity of Five hundred Pounds, to encourage and enable Dr. *James Douglas*, Honorary Fellow of the *College of Phyſicians* in *London*, and Fellow of the *Royal Society*, to communicate the Obſervations and Diſcoveries he has made in Anatomy, both Human and Comparative, and in the Diſeaſes incident to Women, which depend on the vitiated Sructure of the Parts: This is to give Notice, that the whole Work being nearly compleated, he intends in a very little Time, to publiſh, on a large Imperial Paper, the firſt Part of his *Oſteographia Vetus ac Nova*, containing the Figures of all the Bones in an adult Human Body, drawn and engraven by the beſt Maſters, in a great variety of inſtructive Views, and all as large as the Life; with a ſhort Deſcription explaining each Figure. The reſt of this great Work ſhall follow as ſpeedily as the Buſineſs of his Profeſſion can permit. And that the Deſign of his Majeſty's Bounty may be fully anſwer'd, and the Publick reap the intire Benefit of it; this, as well as the ſucceeding Parts, will be ſold at a much eaſier Rate than could otherwiſe have been afforded.

The Method in which the whole Hiſtory of the Bones is to be Proſecuted, will be fully underſtood by that which is obſerved in the following Treatiſe, now in the Preſs, *viz.*

OSTEOGRAPHIÆ

Veteris & novæ

SPECIMEN:

OR, AN

Eſſay towards a new Deſcription

OF THE

HUMAN BONES,

CARTILAGES, LIGAMENTS, } ORIGIN and INSERTION Of all the MUSCLES.

Together with the

Glandulæ and ***Sacculi Mucoſi***

That belong to the

Tendons, Ligaments and Joynts,

Contained in the

Deſcription and Anatomical Hiſtory

OF THE

PATELLA,

OR

Moveable Bone of the KNEE:

Conſidered both in a natural and diſeaſed State.

With FIGURES, on Fifteen *Folio* Copper Plates.